

ATHERSYS, INC / NEW

Form 424B5

January 28, 2011

Table of Contents**Filed pursuant to Rule 424(b)(5)****Registration No. 333-164336****PROSPECTUS SUPPLEMENT****(To Prospectus dated January 28, 2010)****4,366,667 Shares of Common Stock and
Warrants to Purchase 1,310,000 Shares of Common Stock**

This prospectus supplement and accompanying prospectus relate to the issuance and sale of up to 4,366,667 shares of our common stock, par value \$0.001 per share, and warrants to purchase up to an additional 1,310,000 shares of our common stock. The securities will be sold in multiples of a fixed combination consisting of (1) one share of common stock and (2) a warrant to purchase 0.3 of a share of common stock at an exercise price of \$3.55 per share of common stock. Each fixed combination will be sold at a negotiated purchase price of \$3.00. The shares of common stock and warrants will be issued separately. We refer to the shares of common stock issued or issuable hereunder upon exercise of the warrants and the warrants collectively as the securities. This prospectus supplement also relates to the offering of the shares of common stock issuable upon the exercise of the warrants issued in this offering.

Our common stock is listed on the NASDAQ Capital Market under the symbol ATHX. The last reported sale price of our common stock on the NASDAQ Capital Market on January 27, 2011 was \$2.96 per share.

As of January 19, 2011, the aggregate market value of our outstanding common stock held by non-affiliates was \$51,227,307, based on 17,019,039 outstanding shares of common stock held by non-affiliates and a price per share of \$3.01, the closing sale price of our common stock on January 19, 2011. By means of this prospectus supplement, we are offering \$17,043,101 of securities pursuant to General Instruction I.B.6 of Form S-3. We have sold no securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12 calendar month period that ends on, and includes, the date of this prospectus supplement.

We have retained William Blair & Company, L.L.C. and First Analysis Securities Corporation to act as our exclusive placement agents for this offering. We have agreed to pay the placement agents the placement agent fee set forth in the table below, which assumes that we sell all of the securities we are offering. We have also agreed to reimburse the placement agents for certain of their expenses as described under Plan of Distribution in this prospectus supplement. The placement agents are not required to arrange for the sale of any specific number of securities or dollar amount but will use reasonable best efforts to arrange for the sale of the securities.

Investing in our securities involves significant risk. Please read carefully the section entitled Risk Factors beginning on page S-3 of 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.

	Per Fixed Combination	Maximum Offering Amount
Offering Price.	\$3.00	\$13,100,000
Placement Agent Fees.	\$0.21	\$917,000
Proceeds to Us, Before Expenses	\$2.79	\$12,183,000

We estimate the total expenses of this offering, excluding the placement agents fee, will be approximately \$355,000. Because there is no minimum offering amount required as a condition to closing in this offering, the actual offering amount and net proceeds to us, if any, in this offering may be substantially less than the total maximum offering amounts set forth above. It is anticipated that the shares of common stock and the warrants will be delivered against payment thereon on or before February 2, 2011

William Blair & Company**First Analysis Securities Corporation**

Prospectus supplement dated January 27, 2011

TABLE OF CONTENTS
Prospectus Supplement

<u>About This Prospectus Supplement</u>	Page S-ii
<u>Where You Can Find More Information</u>	S-iii
<u>Information We Incorporate By Reference</u>	S-iii
<u>Disclosure Regarding Forward-Looking Statements</u>	S-v
<u>Prospectus Supplement Summary</u>	S-1
<u>Risk Factors</u>	S-3
<u>Use of Proceeds</u>	S-4
<u>Dilution</u>	S-5
<u>Capitalization</u>	S-6
<u>Price Range of Common Stock</u>	S-7
<u>Description of Securities We are Offering</u>	S-8
<u>Plan of Distribution</u>	S-10
<u>Legal Matters</u>	S-13
<u>Experts</u>	S-13

Prospectus

<u>About This Prospectus</u>	Page 1
<u>Where You Can Find More Information</u>	1
<u>Information We Incorporate By Reference</u>	2
<u>The Company</u>	3
<u>Risk Factors</u>	3
<u>Disclosure Regarding Forward-Looking Statements</u>	3
<u>Use of Proceeds</u>	4
<u>Description of Common Stock</u>	5
<u>Description of Warrants</u>	6
<u>Plan of Distribution</u>	8
<u>Legal Matters</u>	10
<u>Experts</u>	10

S-i

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is the prospectus supplement, which describes the terms of this offering. The second part is the accompanying prospectus, which provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. If the description of this offering varies between the prospectus supplement and the accompanying prospectus, you should rely on the information in this prospectus supplement, which supersedes the information in the accompanying prospectus. This prospectus supplement contains information about the securities offered in this offering and may add, update or change information in the accompanying prospectus. Before you invest in any of the securities offered under this prospectus supplement, you should carefully read both this prospectus supplement and the accompanying prospectus together with additional information under the heading "Where You Can Find More Information" and "Information We Incorporate By Reference."

You should rely only on the information contained or incorporated by reference in this prospectus supplement and in the accompanying prospectus or any free writing prospectus that we may provide. We have not authorized anyone to provide you with different information. If anyone provides you with different or additional information, you should not rely on it. You should not assume that the information contained in this prospectus supplement, the accompanying prospectus, any free writing prospectus that we may provide or any document incorporated by reference is accurate as of any date other than the date mentioned on the cover page of these documents. We are not making offers to sell the securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

References in this prospectus supplement and the accompanying 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.

S-ii

Table of Contents

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 supplement or the accompanying prospectus, and the reference to our website does not constitute incorporation by reference into this prospectus supplement or the accompanying prospectus of the information contained at that site, other than documents we file with the SEC that are incorporated by reference into this prospectus supplement and the accompanying prospectus.

INFORMATION WE INCORPORATE BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus supplement and the accompanying 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 supplement and the accompanying 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 in this prospectus supplement and the accompanying prospectus shall be deemed to be modified or superseded to the extent that a statement contained in or omitted from this prospectus supplement or the accompanying prospectus, or in any other subsequently filed document that also is or is deemed to be incorporated by reference, 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 supplement or the accompanying prospectus.

We incorporate by reference the documents listed below and any future documents that we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement:

our annual report on Form 10-K for the year ended December 31, 2009;

our quarterly reports on Form 10-Q for the quarters ended March 31, 2010, June 30, 2010 and September 30, 2010;

our current reports on Form 8-K filed on June 22, 2010, July 28, 2010, August 9, 2010, September 10, 2010, September 13, 2010, October 19, 2010, January 3, 2011, January 20, 2011, January 25, 2011 and January 28, 2011; 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.

We will not, however, incorporate by reference in this prospectus supplement or the accompanying 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.

S-iii

Table of Contents

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) 431-9900
Attn: Secretary
S-iv

Table of Contents

DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and uncertainties. These forward-looking statements 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. We have attempted to identify forward-looking statements by using such words as anticipates, believes, can, continue, could, estimate, expects, intends, may, plans, potential, should, will or other similar expressions. These forward-looking statements are only predictions and are largely based on our current expectations. These forward-looking statements appear in a number of places in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference.

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:

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

- our ability to successfully initiate and complete clinical trials;

- changes in external market factors;

- changes in our industry's overall performance;

- changes in our business strategy;

- our ability to protect our intellectual property portfolio;

- 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 agreements;

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

- changes in productivity and reliability of suppliers; and

- the success of our competitors and the emergence of new competitors.

These factors and the other risk factors described in this prospectus supplement, the accompanying prospectus and 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

S-v

Table of Contents

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.

We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. You are advised, however, to consult any further disclosures we make on related subjects in our reports on Forms 10-K, 10-Q and 8-K filed with the SEC.

S-vi

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus. This summary may not contain all of the information that you should consider before investing in our securities. We urge you to read this entire prospectus supplement, the accompanying prospectus and the documents incorporated by reference carefully, including the section entitled Risk Factors and the financial statements and other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus.

The Company

We are a biopharmaceutical company engaged in the discovery and development of therapeutic product candidates designed to extend and enhance the quality of human life. Through the application of our proprietary technologies, we have established a pipeline of therapeutic product development programs in multiple disease areas. We are currently developing MultiStem® products, based on our patented and proprietary stem cell technology, as treatments for multiple diseases and conditions, including acute myocardial infarction, ulcerative colitis, as support for certain leukemia patients undergoing hematopoietic stem cell transplants, and other areas. In addition, we are developing novel pharmaceuticals to treat indications such as obesity and for certain cognitive, attention and wakefulness disorders.

Company Information

We are incorporated in Delaware 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 supplement or the accompanying prospectus, other than the documents that we file with the SEC that are incorporated by reference into this prospectus supplement and the accompanying prospectus.

Table of Contents

The Offering

Common stock offered by us	4,366,667 shares. 1,310,000 shares issuable upon the exercise of warrants.
Warrants	Each warrant will entitle the holder to purchase 0.3 of a share of our common stock. The warrants will be exercisable at any time from and after the date of issuance until their expiration five years from the date of issuance, at an exercise price of \$3.55 per share of common stock, payable in cash. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the warrants.
Price per fixed combination	\$3.00.
Common stock to be outstanding immediately after this offering	23,297,345 shares (assuming that we sell the maximum number of shares of common stock in this offering).
Use of proceeds	We currently expect to use the net proceeds from this offering for working capital and general corporate purposes. See Use of Proceeds.
Risk factors	You should carefully read and consider the information set forth in Risk Factors beginning on page S-3 of this prospectus supplement before investing in our securities.
NASDAQ Capital Market symbol	ATHX. There is no established public trading market for the warrants and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange.

The number of shares of common stock to be outstanding after the offering is based on 18,930,678 shares of common stock outstanding as of December 31, 2010 and excludes:

4,308,013 shares of common stock reserved for issuance upon the exercise of options granted under our equity compensation plans with a weighted average exercise price of \$4.73 per share;

5,125,496 shares that may be issued upon exercise of outstanding warrants with a weighted average exercise price of \$5.97 per share;

1,310,000 shares of common stock issuable upon exercise of the warrants to be issued to the investors in this offering, at an exercise price of \$3.55 per share; and

shares of common stock that we intend to issue to our former senior lenders as a milestone payment under the terms of our loan agreement, which was repaid in June 2008, as further described in the section entitled Dilution in this prospectus supplement.

Table of Contents

RISK FACTORS

Investing in our securities involves significant risk. Prior to making a decision about investing in our securities, you should carefully consider the specific risk factors included below, as well as the risk factors discussed under the heading **Risk Factors** in our most recent annual report on Form 10-K and in our quarterly reports on Form 10-Q filed subsequently thereto, which are incorporated by reference in this prospectus supplement and the accompanying prospectus 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 may face. Additional risks and uncertainties not currently 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 securities could decline, and you could lose all or a part of your investment.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

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 in the net tangible book value of the common stock you purchase in this offering. Based on an assumed offering price of \$3.00 per fixed combination of securities, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of approximately \$2.03 per share in the net tangible book value of the common stock. See the section entitled **Dilution** in this prospectus supplement for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

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

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

Table of Contents

USE OF PROCEEDS

We expect to receive net proceeds from this offering of approximately \$11.8 million after deducting the placement agents' fees and estimated offering expenses, assuming that we sell 4,366,667 shares of common stock in this offering. Because there is no minimum offering amount required as a condition to the closing of this offering, the actual number of shares of common stock sold, placement agent fees and proceeds to us are not presently determinable and may be substantially less than the maximum amount set forth above.

We currently intend to use the net proceeds from this offering for working capital and general corporate purposes.

Pending the application of the net proceeds as described above, we may invest the net proceeds from this offering in short-term, investment grade, interest-bearing securities.

S-4

Table of Contents**DILUTION**

Investors in shares of our common stock offered in this offering will experience an immediate dilution in the net tangible book value of their common stock from the public offering price of the common stock. The net tangible book value of our common stock as of September 30, 2010 was approximately \$10.9 million, or approximately \$0.57 per share of common stock. Net tangible book value per share of our common stock is calculated by subtracting our total liabilities from our total tangible assets, which is equal to total assets less intangible assets, and dividing this amount by the number of shares of common stock outstanding.

Dilution per share represents the difference between the public offering price per share of our common stock and the adjusted net tangible book value per share of our common stock included in this offering after giving effect to this offering. After giving effect to the sale of all of the securities offered in this offering at the offering price of \$3.00 per fixed combination of securities, and after deducting the placement agents' fees and estimated offering expenses payable by us, our net tangible book value as of September 30, 2010 would have been approximately \$22.7 million, or approximately \$0.97 per share of common stock. This change represents an immediate increase in the net tangible book value of \$0.40 per share of common stock to our existing stockholders and an immediate and substantial dilution in net tangible book value of \$2.03 per share of common stock to new investors. The following table illustrates this per share dilution:

Offering price per fixed combination	\$ 3.00
Net tangible book value per share as of September 30, 2010	\$ 0.57
Increase in net tangible book value per share attributable to new investors	\$ 0.40
Net tangible book value per share after this offering	\$ 0.97
Dilution per share to new investors	\$ 2.03

The number of shares of common stock to be outstanding after the offering is based on 18,930,678 shares of common stock outstanding as of September 30, 2010 and excludes:

4,188,950 shares of common stock reserved for issuance upon the exercise of options granted under our equity compensation plans with a weighted average exercise price of \$4.79 per share;

5,125,496 shares that may be issued upon exercise of outstanding warrants with a weighted average exercise price of \$5.97 per share;

1,310,000 shares of common stock issuable upon exercise of the warrants to be issued to the investors in this offering, at an exercise price of \$3.55 per share; and

shares of common stock that we intend to issue to our former senior lenders as a milestone payment under the terms of our loan agreement, which was repaid in June 2008. Under the Loan and Security Agreement, and Supplement, dated as of November 2, 2004, by and among ABT Holding Company (formerly known as Athersys, Inc.), Advanced Biotherapeutics, Inc., Venture Lending & Leasing IV, Inc., and Costella Kirsch IV, L.P., as amended, the senior lenders retain a right to receive a milestone payment of a portion of the amount from proceeds of certain equity financings of an amount equal to 10% of the proceeds above \$5.0 million in cumulative gross proceeds up to an aggregate milestone amount of \$2.25 million. As a result of this offering, we are obligated to pay the senior lenders \$810,000. As the loan agreement permits, we intend to pay 75% of the milestone payment in shares of common stock at the per-share offering price of this offering.

Table of Contents**CAPITALIZATION**

The following table shows our cash and cash equivalents, available-for-sale securities and capitalization as of September 30, 2010 on an actual basis and on an as adjusted basis to reflect the sale of 4,366,667 shares of our common stock offered in this offering, after deducting the placement agents' fees and estimated offering expenses.

This table should be read in conjunction with our financial statements and the accompanying notes and Management's Discussion and Analysis of Financial Condition and Results of Operations contained in the annual, quarterly and other reports filed by us with the SEC, which are incorporated by reference in this prospectus supplement and the accompanying prospectus.

	As of September 30, 2010	
	Actual	As Adjusted
	(in thousands)	
	(unaudited)	
Cash and cash equivalents	\$ 2,210	\$ 14,038
Available-for-sale securities	\$ 15,630	\$ 15,630
Long-term debt	\$	\$
Stockholders' equity:		
Preferred stock, at stated value; 10,000,000 shares authorized, and no shares issued and outstanding at September 30, 2010, actual and as adjusted		
Common stock, \$0.001 par value; 100,000,000 shares authorized, and 18,930,678 shares issued and outstanding at September 30, 2010, actual, and 23,297,345 shares issued and outstanding at September 30, 2010, as adjusted	19	23
Additional paid-in capital	213,954	225,778
Accumulated other comprehensive income	47	47
Accumulated deficit	(203,163)	(203,163)
Total stockholders' equity	10,857	22,685
Total capitalization	\$ 10,857	\$ 22,685

Table of Contents**PRICE RANGE OF COMMON STOCK**

Our common stock is traded on the NASDAQ Capital Market under the symbol ATHX. Set forth below are the high and low sale prices for our common stock on the NASDAQ Capital Market for the periods indicated.

	High	Low
Year ended December 31, 2009:		
First Quarter	\$1.28	\$0.45
Second Quarter	\$1.04	\$0.75
Third Quarter	\$1.35	\$0.78
Fourth Quarter	\$6.40	\$0.97
Year ended December 31, 2010:		
First Quarter	\$4.40	\$2.32
Second Quarter	\$3.63	\$2.56
Third Quarter	\$3.55	\$2.34
Fourth Quarter	\$3.19	\$2.42
Year ended December 31, 2011:		
First Quarter (through January 27, 2011)	\$3.08	\$2.46

The last reported sale price of our common stock on the NASDAQ Capital Market on January 27, 2011 was \$2.96 per share.

Holders

As of December 31, 2010, the number of holders of record was approximately 695, of which one is Cede & Co., a nominee for The Depository Trust Company, or DTC. Shares of common stock that are held by financial institutions as nominees for beneficial owners are deposited into participant accounts at DTC, and are considered to be held of record by Cede & Co., as one stockholder.

Dividend Policy

All of our assets consist of the capital stock of our subsidiary, ABT Holding Company. We conduct all of our operations through ABT Holding Company. Consequently, our ability to fund our operations depends on ABT Holding Company's financial condition and its ability to make dividend payments or other cash distributions to us. 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 two years. 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.

Table of Contents

DESCRIPTION OF SECURITIES WE ARE OFFERING

The shares of common stock and warrants and the shares of common stock issuable upon exercise of the warrants offered in this offering will be issued pursuant to a subscription agreement between each of the investors and us. We urge you to review the subscription agreement and the form of warrant, which are included as exhibits to a current report on Form 8-K filed with the SEC in connection with this offering, for a complete description of the terms and conditions applicable to the securities. The following brief summary of the material terms and provisions of the warrants is subject to, and qualified in its entirety by, the form of warrant. This prospectus supplement also relates to the offering of the shares of our common stock issuable upon exercise, if any, of the warrants issued to the investors in this offering. The securities will be sold in multiples of a fixed combination consisting of one share of common stock and a warrant to purchase 0.3 of a share of common stock, at an initial exercise price of \$3.55. We are offering the fixed combination at a negotiated price of \$3.00 per fixed combination.

Common Stock

The following description of our common stock is a summary. It is not complete and is subject to and qualified in its entirety by our certificate of incorporation and bylaws, as amended, a copy of each of which has been incorporated as an exhibit to the registration statement of which this prospectus supplement forms a part.

As of the date of this prospectus supplement, our certificate of incorporation authorizes us to issue 100,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share. As of December 31, 2010, 18,930,678 shares of common stock were outstanding and no shares of preferred stock were outstanding.

A description of the general terms and provisions of our common stock and each other class of our securities that qualifies or limits our common stock is set forth under the caption **Description of Common Stock** on page 5 of the accompanying prospectus.

Warrants

The warrants offered in this offering will be issued in registered form pursuant to a subscription agreement between each of the investors and us. You should review a copy of the subscription agreement, and the form of warrant, which have been filed as exhibits to a current report on Form 8-K filed with the SEC in connection with this offering, for a complete description of the terms and conditions applicable to the warrants. The following is a brief summary of the warrants and is subject in all respects to the provisions contained in the warrants.

Exercisability. The warrants are exercisable at any time on or after the original date of issuance and expire five years from the date of issuance. The warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). The number of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act does not exceed 4.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise). We refer to this as the beneficial ownership limitation. The holder may elect to increase or decrease this beneficial ownership limitation to any other percentage, but not less than 4.99% and not in excess of 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise), provided that any such increase or decrease will not be effective until 61 days after such written notice is delivered.

Cashless Exercise. If at any time during the warrant exercisability period there is no effective registration statement registering the issuance of the shares of common stock issuable upon exercise of the warrants, the warrants may be exercised by means of a cashless exercise in which a warrant holder will be entitled to surrender a portion of the shares of common stock subject to the warrant in lieu of cash for the exercise price.

Table of Contents

Exercise Price. The exercise price of the warrants is \$3.55. The exercise price is subject to appropriate adjustment in the event of stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

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

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

Fundamental Transactions. If, while any warrants are outstanding, we consummate any fundamental transaction, as described in the warrants and generally including any consolidation or merger into another corporation, the consummation of a transaction whereby another entity acquires more than 50% of our outstanding voting stock, or the sale, assignment, transfer or conveyance of substantially all of our assets, the holder of any outstanding warrants will receive upon exercise of the warrants, the securities or other consideration to which a holder of the number of shares of common stock then deliverable upon the exercise of such warrants would have been entitled upon the fundamental transaction. Furthermore, we cannot enter into a fundamental transaction unless the successor entity assumes in writing all of our obligations to the warrant holders.

Black-Scholes Payment. Additionally, in the event of a fundamental transaction and under certain conditions, each warrant holder will have the right to require us, or our successor, to repurchase its warrant for an amount of cash equal to the Black-Scholes value of the remaining unexercised portion of the warrant on the date of the consummation of the fundamental transaction.

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

Waivers and Amendments. Any term of the warrants may be amended or waived with our written consent and the written consent of the holders of warrants. However, in no event may the exercise price of or the number of shares of our common stock subject to any warrant be amended, nor may the right to exercise that warrant be waived, without the written consent of the holder of that warrant.

Table of Contents**PLAN OF DISTRIBUTION**

Pursuant to a placement agency agreement among us, William Blair & Company, L.L.C. and First Analysis Securities Corporation, we have engaged William Blair & Company, L.L.C. and First Analysis Securities Corporation as the exclusive placement agents in connection with this offering. The placement agents may engage selected dealers to assist in the placement of the securities. The placement agents are not purchasing or selling any of the securities we are offering, and they are not required to arrange the purchase or sale of any specific number of securities or dollar amount, but the placement agents have agreed to use reasonable best efforts to arrange for the sale of the securities.

The placement agency agreement provides that the obligation of the placement agents is subject to certain conditions precedent, including, among other things, the absence of any material adverse change in our business and the receipt of customary opinions, letters and closing certificates.

The placement agents propose to arrange for the sale of the securities we are offering pursuant to this prospectus supplement to one or more investors through subscription agreements directly between the purchasers and us. All of the securities will be sold at the same price and, we expect, at a single closing. We established the price following negotiations with prospective investors and with reference to the prevailing market price of our common stock, recent trends in such price and other factors. It is possible that not all of the securities we are offering pursuant to this prospectus supplement will be sold at the closing, in which case our net proceeds would be reduced. We expect that the sale of the securities will be completed on the date indicated on the cover page of this prospectus supplement.

Commissions and Expenses

We will pay the placement agents a placement agent fee equal to 7% of the gross proceeds of this offering. The following table shows the per share and total placement agent fees we will pay to the placement agents in connection with the sale of the securities, assuming the purchase of all of the securities we are offering.

Per fixed combination	\$ 0.21
Total	\$917,000

We have agreed to pay each of Brean Murray, Carret & Co. and WBB Securities a fee of \$50,000 each for serving as our financial advisors in connection with this offering. Such amount shall be deducted from the placement agents fee set forth above.

We estimate the total expenses of this offering, which will be payable by us, excluding the placement agent fees, will be approximately \$355,000, which includes up to the lesser of (i) \$100,000 and (ii) 8% of the gross proceeds received by us less the placement agent fees that we have agreed to reimburse to the placement agent for certain fees and legal expenses reasonably incurred by them. The maximum fees to be received by any member of the Financial Industry Regulatory Association, or FINRA, or independent broker-dealer may not be greater than eight percent (8%) of the initial gross proceeds from the sale of any shares of common stock being offered hereby. After deducting certain fees due to the placement agents and our estimated offering expenses, we expect the net proceeds from this offering to be approximately \$11.8 million.

We have agreed to indemnify the placement agents against certain liabilities, including liabilities under the Securities Act of 1933. We have also agreed to contribute to payments the placement agents may be required to make in respect to such liabilities.

We, along with our executive officers and directors, have agreed to certain lock-up provisions with regard to future sales of our common stock for a period of 60 days after the offering as set forth in the placement agency agreement. See No Sales of Similar Securities.

The placement agency agreement is included as exhibit 1.1 to our Current Report on Form 8-K filed with the SEC in connection with this offering.

No Sales of Similar Securities

We and our executive officers and directors have agreed, subject to certain exceptions, not to sell or transfer any common stock or securities convertible into, exchangeable for, exercisable for, or repayable with common stock, other than the securities that we may sell in this offering, for 60 days after the date of this prospectus supplement without first obtaining the written consent of the placement agents. Specifically, we and these other individuals have agreed not to directly or indirectly:

Table of Contents

offer, pledge, announce the intention to sell, sell or contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock;

file or cause to become effective a registration statement under the Securities Act relating to the offer and sale of any shares of common stock or securities convertible into or exercisable or exchangeable for shares of common stock; or

enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock, whether any such transaction described in this list is to be settled by delivery of common stock or such other securities, in cash or otherwise.

The foregoing restrictions with respect to our executive officers and directors do not apply to:

transfers of shares of common stock or any security convertible into common stock as a bona fide gift, provided that the donee or donees thereof agree to be bound in writing by the restrictions set forth above;

transfers of shares of common stock or any security convertible into common stock either during the individual's lifetime or upon death by will or intestate succession to the immediate family of the individual or to a trust the beneficiaries of which are exclusively the individual and/or a member or members of his immediate family, provided that the trustee agrees to be bound in writing by the restrictions set forth above;

transfers effected pursuant to any exchange of underwater options with us;

transfers to us to satisfy any payment or withholding obligations in connection with the exercise or settlement of any equity awards under our equity compensation plans or any exercise of any option or warrant to purchase shares of common stock;

the exercise of any warrant or the acquisition or exercise of any stock option or the acquisition of shares of common stock issued pursuant to our equity compensation plans, including any exercise effected by the delivery of shares of our common stock held by an executive officer or director;

sales or transfers of shares made pursuant to any trading plan established pursuant to Rule 10b5-1 of the Exchange Act that has been entered into by the individual prior to the date of the agreement; or

the entry into any trading plan established pursuant to Rule 10b5-1 of the Exchange Act, *provided* that no sales or other dispositions may occur under such plan until the expiration of the restricted period.

The foregoing restrictions with respect to us do not apply to:

securities offered in this offering;

any shares of common stock issued upon the exercise of an option or warrant or the conversion of a security outstanding on the date of this prospectus supplement;

any shares of common stock issued or options to purchase common stock granted to employees, directors and/or consultants pursuant to our employee benefit and stock plans;

any shares of common stock issued as consideration for mergers, acquisitions, other business combinations, or strategic alliances; or

any shares of common stock issued pursuant to

the Loan and Security Agreement, and Supplement, dated as of November 2, 2004, by and among ABT Holding Company (formerly known as Athersys, Inc.), Advanced Biotherapeutics, Inc., Venture Lending & Leasing IV, Inc., and Costella Kirsch IV, L.P., as amended,

the Strategic Alliance Agreement, by and between ABT Holding Company (formerly known as Athersys, Inc.) and Angiotech Pharmaceuticals, Inc., dated as of May 5, 2006, or

the Cooperation and Exclusive License Agreement, made and entered into on August 30, 2007, by and between Athersys, Inc., ReGenesys BVBA, the Katholieke Universiteit Leuven and, for Articles 3.2.1 and 4.1, The Regents of the University of Minnesota.

The 60-day restricted period in all of the agreements is subject to extension if (i) during the last 17 days of the restricted period we issue an earnings release or material news or a material event relating to us occurs or (ii) prior to

S-11

Table of Contents

the expiration of the restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of the restricted period, in which case the restrictions imposed in these lock-up agreements shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

Listing

Our common stock is listed on the Nasdaq Capital Market under the symbol ATHX. There is no established public trading market for the warrants and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange.

Electronic Distribution

This prospectus supplement and the accompanying prospectus may be made available in electronic format on websites or through other online services maintained by the placement agents, or by an affiliate. Other than this prospectus supplement and the accompanying prospectus in electronic format, the information on the placement agents' website and any information contained in any other websites maintained by the placement agents is not part of this prospectus supplement or the accompanying prospectus or the registration statement of which this prospectus supplement and the accompanying prospectus forms a part, has not been approved and/or endorsed by us or the placement agent, and should not be relied upon by investors.

The foregoing does not purport to be a complete statement of the terms and conditions of the placement agency agreement and subscription agreements. A copy of the placement agency agreement and the form of subscription agreement with the investors are included as exhibits to our current report on Form 8-K that will be filed with the SEC and incorporated by reference into the Registration Statement of which this prospectus supplement forms a part. See

Where You Can Find More Information on page S-iii.

Regulation M Restrictions

The placement agents may be deemed to be underwriters within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the securities sold by them while acting as principals might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agents would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of securities by the placement agents acting as a principal. Under these rules and regulations, the placement agents:

must not engage in any stabilization activity in connection with our securities; and

must not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Affiliations

The placement agents and their respective affiliates may provide various investment banking, financial advisory and other services to us and our affiliates for which services they have received, and may in the future receive, customary fees. In the course of their businesses, the placement agents and their respective affiliates may actively trade our securities or loans for their own account or for the accounts of customers, and, accordingly, the placement agents and their respective affiliates may at any time hold long or short positions in such securities or loans.

S-12

Table of Contents

LEGAL MATTERS

The validity of the issuance of the securities offered in this offering has been passed upon for us by Jones Day. Lowenstein Sandler PC acted as counsel to the placement agents in connection with this offering.

EXPERTS

The consolidated financial statements of Athersys, Inc. appearing in Athersys, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2009 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

S-13

Table of Contents

PROSPECTUS

**20,000,000 Shares
Common Stock
Warrants**

We may from time to time issue up to 20,000,000 shares of our common stock and/or warrants to purchase such common stock in one or more offerings.

We will provide the specific terms of the securities to be offered in one or more supplements to this prospectus. You should read this prospectus and the applicable prospectus supplement carefully before you invest in our securities. This prospectus may not be used to offer and sell our securities unless accompanied by a prospectus supplement describing the method and terms of the offering of those offered securities.

We may sell the securities directly or to or through underwriters or dealers, and also to other purchasers or through agents. The names of any underwriters or agents that are included in a sale of securities to you, and any applicable commissions or discounts, will be stated in an accompanying prospectus supplement. In addition, the underwriters, if any, may over-allot a portion of the securities.

Investing in any of our securities involves risk. Please read carefully the section entitled Risk Factors beginning on page 3 of this prospectus.

Our common stock is listed on the NASDAQ Capital Market under the symbol ATHX. As of January 11, 2010, the aggregate market value of our outstanding common stock held by non-affiliates was approximately \$47 million. We have not offered any of our common stock pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date 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 28, 2010

Table of Contents

TABLE OF CONTENTS

	Page
<u>About This Prospectus</u>	1
<u>Where You Can Find More Information</u>	1
<u>Information We Incorporate By Reference</u>	2
<u>The Company</u>	3
<u>Risk Factors</u>	3
<u>Disclosure Regarding Forward-Looking Statements</u>	3
<u>Use of Proceeds</u>	4
<u>Description of Common Stock</u>	5
<u>Description of Warrants</u>	6
<u>Plan of Distribution</u>	8
<u>Legal Matters</u>	10
<u>Experts</u>	10

-i-

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the SEC using a shelf registration process. Under this shelf process, we may from time to time sell up to 20,000,000 shares of our common stock and/or warrants to purchase such common stock in one or more offerings.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. For a more complete understanding of the offering of the securities, you should refer to the registration statement, including its exhibits. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with additional information under the heading "Where You Can Find More Information" and "Information We Incorporate By Reference."

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 authorized anyone to provide you with different information. 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 mentioned on the cover page of these documents. We are not making offers to sell the securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

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.

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.

Table of Contents

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 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.

our annual report on Form 10-K for the year ended December 31, 2008;

our quarterly reports on Form 10-Q for the quarters ended March 31, 2009, June 30, 2009 and September 30, 2009;

our current reports on Form 8-K filed on April 9, 2009; December 21, 2009 and December 24, 2009; 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.

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

Table of Contents

THE COMPANY

We are a biopharmaceutical company engaged in the discovery and development of therapeutic product candidates designed to extend and enhance the quality of human life. Through the application of our proprietary technologies, we have established a pipeline of therapeutic product development programs in multiple disease areas. Our current product development portfolio includes MultiStem®, a patented and proprietary stem cell product that we are developing as a treatment for multiple disease indications, which is currently being evaluated in two ongoing clinical trials. In addition, we are developing novel pharmaceuticals to treat indications such as obesity and certain neurological conditions that affect attention, cognition or wakefulness, such as narcolepsy, excessive daytime sleepiness, and chronic fatigue associated with Parkinson's disease and other conditions.

Corporate Information

We are incorporated in Delaware 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.

RISK FACTORS

Investing in our securities involves risk. Prior to making a decision about investing in our securities, you should carefully consider the specific 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 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. 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 securities could decline, and you could lose all or a part of your investment.

DISCLOSURE 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, intentions, 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 successfully initiate or complete clinical trials for our product candidates;
- the possibility of delays in, adverse results of and excessive costs of the development process;
- changes in external market factors;
- changes in our industry's overall performance;

Table of Contents

changes in our business strategy;

our ability to protect our intellectual property portfolio;

our possible inability to enter into licensing or co-development arrangements for certain product candidates;

our possible inability to execute our strategy due to changes in our industry or the economy generally, including the current economic crisis;

our ability to obtain capital in difficult market conditions;

changes in financial stability of collaborators;

changes in productivity and reliability of suppliers; and

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

These factors and the other risk factors described in this prospectus and any accompanying 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.

USE OF PROCEEDS

Unless we inform you otherwise in the applicable prospectus supplement, we expect to use the net proceeds from the sale of securities for general corporate purposes, including, but not limited to, research and development costs, payment obligations and capital expenditures. Pending any specific application, we may initially invest funds in debt instruments of the U.S. government and its agencies, corporate debt securities, floating-rate notes and A1+/P1 commercial paper.

Table of Contents

DESCRIPTION OF COMMON STOCK

We are authorized to issue 100,000,000 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. These documents are also incorporated by reference into the registration statement of which this prospectus forms a part.

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. These documents are also incorporated by reference into the registration statement of which this prospectus forms a part.

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

DESCRIPTION OF WARRANTS

General

We may issue warrants for the purchase of shares of common stock. The following description sets forth certain general terms and provisions of the warrants that we may offer pursuant to this prospectus. The particular terms of the warrants and the extent, if any, to which the general terms and provisions may apply to the warrants so offered will be described in the applicable prospectus supplement.

Warrants may be issued independently or together with other securities 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 and will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants.

A copy of the forms of the warrant agreement and the warrant certificate relating to any particular issue of warrants will be filed with the SEC each time we issue warrants, and you should read those documents for provisions that may be important to you. For more information on how you can obtain copies of the forms of the warrant agreement and the related warrant certificate, see [Where You Can Find More Information](#).

Common Stock Warrants

The prospectus supplement relating to a particular issue of warrants to issue shares of common stock will describe the terms of the common stock warrants, including the following:

the title of the warrants;

the offering price for the warrants, if any;

the aggregate number of the warrants;

if applicable, the date from and after which the warrants and the common stock issued with the warrants will be separately transferable;

the number of shares of common stock that may be purchased upon exercise of a warrant and the price at which the shares may be purchased upon exercise;

the dates on which the right to exercise the warrants 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 United States federal income tax considerations;

anti-dilution provisions of the warrants, if any;

redemption or call provisions, if any, applicable to the warrants;

any additional terms of the warrants, including terms, procedures and limitations relating to the exchange and exercise of the warrants; and

any other information we think is important about the warrants.

Table of Contents

Exercise of Warrants

Each warrant will entitle the holder of the warrant to purchase at the exercise price set forth in the applicable prospectus supplement the shares of common stock being offered. Holders may exercise warrants at any time up to the close of business on the expiration date set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants are void. Holders may exercise warrants as set forth in the prospectus supplement relating to the warrants being offered.

Until a holder exercises the warrants to purchase our shares of common stock, the holder will not have any rights as a holder of our common stock by virtue of ownership of warrants.

Table of Contents

PLAN OF DISTRIBUTION

We may sell the offered securities in and outside the United States:
through underwriters or dealers;

directly to purchasers;

in a rights offering;

in at the market offerings, within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market on an exchange or otherwise;

through agents; or

through a combination of any of these methods.

The prospectus supplement will include the following information:
the terms of the offering;

the names of any underwriters or agents;

the name or names of any managing underwriter or underwriters;

the purchase price or initial public offering price of the securities;

the net proceeds from the sale of the securities;

any delayed delivery arrangements;

any underwriting discounts, commissions and other items constituting underwriters' compensation;

any discounts or concessions allowed or reallocated or paid to dealers; and

any commissions paid to agents.

Sale through Underwriters or Dealers

If underwriters are used in the sale, the underwriters will acquire the securities for their own account. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless we inform you otherwise in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

During and after an offering through underwriters, the underwriters may purchase and sell the securities in the open market. These transactions may include overallotment and stabilizing transactions and purchases to cover syndicate short positions created in connection with the offering. The underwriters may also impose a penalty bid, which means that selling concessions allowed to syndicate members or other broker-dealers for the offered securities sold for their account may be reclaimed by the syndicate if the offered securities are repurchased by the syndicate in stabilizing or covering transactions. These activities may stabilize, maintain or otherwise affect the market price of the offered securities, which may be higher than the price that might otherwise prevail in the open market. If commenced, the

underwriters may discontinue these activities at any time.

Table of Contents

If dealers are used in the sale of securities, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. We will include in the prospectus supplement the names of the dealers and the terms of the transaction.

Direct Sales and Sales through Agents

We may sell the securities directly. In this case, no underwriters or agents would be involved. We may also sell the securities through agents designated from time to time. In the prospectus supplement, we will name any agent involved in the offer or sale of the offered securities, and we will describe any commissions payable to the agent. Unless we inform you otherwise in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. We will describe the terms of any sales of these securities in the prospectus supplement.

Remarketing Arrangements

Offered securities may also be offered and sold, if so indicated in the applicable prospectus supplement, in connection with a remarketing upon their purchase, in accordance with a redemption or repayment pursuant to their terms, or otherwise, by one or more remarketing firms, acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreements, if any, with us and its compensation will be described in the applicable prospectus supplement.

Delayed Delivery Contracts

If we so indicate in the prospectus supplement, we may authorize agents, underwriters or dealers to solicit offers from certain types of institutions to purchase securities from us at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement. The prospectus supplement will describe the commission payable for solicitation of those contracts.

General Information

We may have agreements with the agents, dealers, underwriters and remarketing firms to indemnify them against certain civil liabilities, including liabilities under the Securities Act, or to contribute with respect to payments that the agents, dealers, underwriters or remarketing firms may be required to make. Agents, dealers, underwriters and remarketing firms may be customers of, engage in transactions with or perform services for us in the ordinary course of their businesses.

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, 2008, including the schedule appearing therein, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

Table of Contents

4,366,667 Shares of Common Stock
Warrants to Purchase up to 1,310,000 Shares of Common Stock
William Blair & Company
First Analysis Securities Corporation