

STEMLINE THERAPEUTICS INC
Form 424B5
January 07, 2015

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The information contained in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. A registration statement relating to the securities has been declared effective by the Securities and Exchange Commission. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JANUARY 7, 2015

PRELIMINARY PROSPECTUS SUPPLEMENT
(to Prospectus dated February 12, 2014)

Filed pursuant to rule 424(b)(5)
Registration No. 333-193726

Shares

Common Stock

We are offering _____ shares of our common stock in this offering.

Our common stock is listed on The NASDAQ Capital Market under the symbol "STML." On January 6, 2015, the last reported sale price of our common stock on The NASDAQ Capital Market was \$17.79 per share.

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012, and, as such, we elected to comply with certain reduced public company reporting requirements.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page S-5 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement.

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

| | PER SHARE | TOTAL |
|---|--------------|-------|
| Public offering price | \$ | \$ |
| Underwriting discounts and commissions ⁽¹⁾ | \$ | \$ |
| Proceeds to Stemline, before expenses | \$ | \$ |

(1)

See "Underwriting" for additional details on the underwriting compensation.

Delivery of the shares of common stock is expected to be made on or about _____, 2015. We have granted the underwriters an option for a period of 30 days to purchase an additional _____ shares of our common stock. If the underwriters exercise the option in full, the total underwriting discounts and commissions payable by us will be \$ _____, and the total proceeds to us, before expenses will be \$ _____.

Joint Book-Running Managers

Jefferies

Cowen and Company

Co-Lead Manager

Aegis Capital Corp

Prospectus Supplement dated _____, 2015

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You should rely only on the information contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and in any free writing prospectus that we have authorized for use in connection with this offering. We have not, and the underwriters have not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriters are not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering of common stock and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus, dated February 12, 2014, provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus supplement, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement and the information contained in the accompanying prospectus or any document incorporated by reference that was filed with the U.S. Securities and Exchange Commission (SEC) before the date of this prospectus supplement, you should rely on the information in this prospectus supplement; provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

Unless otherwise stated, all references in this prospectus supplement to "we," "us," "our," "Stemline," the "Company" and similar designations refer to Stemline Therapeutics, Inc. This prospectus supplement contains trademarks and trade names of Stemline Therapeutics, Inc., including our name and logo. Other service marks, trademarks and trade names referred to in this document are the property of their respective owners.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus and in the documents we incorporate by reference. This summary does not contain all of the information that you should consider before deciding to invest in our common stock. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the "Risk factors" section contained in this prospectus supplement, the "Risk Factor" Sections contained in the documents incorporated by reference herein, and our consolidated financial statements and the related notes and the other documents incorporated by reference herein, before making an investment decision.

Overview

We are a clinical stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing proprietary therapeutics that target both cancer stem cells, or CSCs, and tumor bulk. We are currently developing two clinical stage product candidates, SL-401 and SL-701, as well as a pipeline of preclinical candidates that includes SL-501, SL-101 and SL-801.

Recent Developments

We have exclusively licensed from CanBas Co., Ltd. the rights to develop and commercialize a novel, oral small molecule reversible inhibitor of Exportin-1 (XPO1), a nuclear transport target also known as Chromosome Region Maintenance-1 (CRM1). Stemline has acquired worldwide rights with the exception of Japan, Korea, Taiwan and China. Stemline will now refer to the compound as SL-801.

Recent work has demonstrated that XPO1 is a clinically relevant target, and nuclear export inhibitors have emerged as a new approach in cancer treatment with activity in patients across multiple indications. Given that SL-801 is a novel reversible inhibitor of XPO1, we believe it has the potential to offer a broad therapeutic window with dosing and scheduling flexibility. SL-801 has demonstrated preclinical anti-cancer activity, including efficacy and safety in animal models, across a wide array of solid and hematologic cancers. Stemline expects to file an Investigational New Drug, or IND, application in 2015.

On December 31, 2014 and September 30, 2014, we had cash, cash equivalents, short-term investments and long-term investments of approximately \$58.6 million and \$65.0 million, as compared to \$84.4 million and \$87.7 million, as of December 31, 2013 and September 30, 2013, respectively.

SL-401

SL-401 is a targeted therapy directed to the interleukin-3 receptor, or IL-3R, present on CSCs and tumor bulk of a variety of hematologic cancers. SL-401 is currently under development in three clinical trials across seven indications including blastic plasmacytoid dendritic cell neoplasm, or BPDCN, four high-risk myeloproliferative neoplasms, or MPNs, and early and late stage acute myeloid leukemia, or AML. Additional clinical trials are planned in other indications including multiple myeloma, hairy cell leukemia, and certain lymphomas. We are pursuing accelerated approval strategies for several of these indications, including BPDCN.

In July 2014, we opened a corporate sponsored IND with the U.S. Food and Drug Administration, or FDA. A multicenter clinical trial with SL-401 is currently open and accruing patients with BPDCN and relapsed or refractory AML, with a brief lead-in dose escalation stage that will be followed by expansion stages in each indication. A clinical trial with SL-401 is also currently open in patients with AML who are in first complete remission, or CR, with minimal residual disease, or MRD, which is associated with a high relapse rate. Additionally, a clinical trial with SL-401 is currently open in patients with four types of high-risk MPNs, including systemic mastocytosis, advanced symptomatic hypereosinophilic disorder, myelofibrosis, and chronic myelomonocytic leukemia, all of which appear to be derived from a common IL-3R+ progenitor cell.

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Previously, SL-401 demonstrated single agent activity, including multiple durable CRs, in an investigator sponsored Phase 1/2 trial involving several indications including BPDCN and relapsed or refractory AML, the results of which were reported in the journal *Blood* in July 2014. In particular, seven of nine evaluable BPDCN patients had objective responses (78% overall response rate), including 5 CRs (56% CR rate). Median response duration was 8 months, with two patients still in remission at 26+ and 16+ months, with only a single 5-day course of SL-401 (updated data since publication). In all current and planned trials, SL-401 will be administered in multiple consecutive cycles.

SL-701

SL-701 is an enhanced immunotherapy designed to activate the immune system to attack tumors. SL-701 is currently being developed as a single agent in adult patients with second-line glioblastoma multiforme, or GBM. In April 2014, we opened a corporate sponsored IND with the FDA. A multicenter, open-label clinical trial with SL-701 is currently accruing patients with the expectation to enroll approximately 100 patients. We believe that this trial could serve as the basis for accelerated approval or as the foundation for a subsequent randomized Phase 3 pivotal trial in this indication. An additional trial in pediatric patients with non-brainstem and brainstem gliomas is also being planned. Previously, an earlier version of the therapy demonstrated clinical activity, including durable CRs and partial responses, or PRs, in investigator sponsored Phase 1/2 trials in advanced adult and pediatric brain cancers. We have since taken steps to develop what we believe is an enhanced version of this therapy optimized for activity and administration.

Preclinical Pipeline

We plan to advance our preclinical pipeline of product candidates which includes SL-501, SL-101, and SL-801. SL-501 and SL-101 are next generation IL-3R-targeted compounds which we are developing for use in oncology and potentially certain autoimmune diseases. SL-801 is a novel oral small molecule reversible inhibitor of nuclear transport, targeting Exportin-1, or XPO1, which we plan to develop for the treatment of a variety of solid and hematologic cancers. We intend to submit INDs for SL-501 and/or SL-101 and SL-801 and advance these compounds into Phase 1 clinical proof-of-concept studies.

StemScreen

StemScreen is an innovative drug discovery platform we are developing and optimizing to enable the high throughput screening of compound libraries in an effort to identify novel compounds with activity against CSCs.

Intellectual Property and Regulatory Exclusivity

We have built an extensive intellectual property portfolio, including some patents with priority dates as early as 1997 in the CSC and IL-3R-directed areas. Our portfolio includes over 20 issued patents in the United States and abroad, and includes issued patents around not only general CSC-directed and IL-3R-directed targeting, but also our specific pipeline candidates SL-401, SL-701, SL-501, SL-101, and SL-801. SL-401 has received Orphan Drug designation in BPDCN and AML.

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CSC Field

The field of CSCs is an emerging area of cancer biology that we believe is fundamentally altering the approach to oncology drug development. CSCs have been identified in virtually all major tumor types, including leukemia and cancers of the brain, breast, colon, prostate and pancreas. CSCs are the highly malignant "seeds" of a tumor that self-renew and generate more mature cells that comprise the bulk of the tumor, or the "tumor bulk." As such, we believe that CSCs are responsible for tumor initiation, propagation and metastasis. Moreover, many of the characteristics of CSCs, such as their slow growth, presence of multi-drug resistance proteins, anti-cell death mechanisms, and increased activity of cellular mechanisms that repair damaged DNA, may enable CSCs to resist therapeutic agents traditionally used to treat cancer. Further, we believe there is now a significant body of evidence indicating that while standard therapies may initially shrink tumors by targeting the tumor bulk, their failure to effectively eradicate CSCs contributes to treatment failure, tumor relapse and poor survival. Accordingly, we believe that targeting both CSCs and the tumor bulk may represent a major advance in the fight against cancer. This premise has formed the basis of our drug development strategy, as illustrated below.

Company Information

We were incorporated under the laws of the State of Delaware in August 2003. Our principal executive offices are located at 750 Lexington Avenue, Eleventh Floor, New York, New York 10022, and our telephone number is (646) 502-2311.

Our website address is www.stemline.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus and should not be considered part of these documents. We will make available through our website, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, and any amendments to these reports, as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the Securities and Exchange Commission, or SEC. You may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. Additionally, the SEC maintains a website that contains annual, quarterly, and current reports, proxy statements, and other information that issuers (including us) file electronically with the SEC. The SEC's website address is <http://www.sec.gov/>.

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THE OFFERING

| | |
|---|--|
| Common stock offered by us | shares |
| Common stock to be outstanding after the offering | shares |
| Option to purchase additional shares | We have granted the underwriters an option to purchase additional shares of common stock. This option is exercisable, in whole or in part, for a period of 30 days from the date of this prospectus supplement. |
| Use of proceeds | We intend to use the net proceeds from this offering for (i) clinical development of SL-401 in multiple hematologic cancer types, including a pivotal trial in BPDCN; (ii) clinical development of SL-701 in advanced brain cancer; (iii) advancement of our preclinical pipeline, including SL-501, SL-101, and SL-801; (iv) development of our drug discovery platform; and (v) other general corporate purposes. We may also use a portion of the net proceeds to acquire assets that are complementary to our own. We regularly consider such opportunities, but are not currently negotiating any such transactions. See "Use of Proceeds" on page S-9 of this prospectus supplement. |
| Risk factors | See "Risk Factors" beginning on page S-5 and our "Risk Factors" beginning on page 33 of our Annual Report on Form 10-K for the year ended December 31, 2013, which is incorporated by reference herein, for a discussion of factors that you should consider before investing in our common stock. |
| NASDAQ Capital Market symbol | STML |
| The number of shares of our common stock outstanding after this offering is based on 13,285,232 actual shares of our common stock outstanding as of December 31, 2014, and excludes, as of such date: | |

1,643,532 shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2014, at a weighted-average exercise price of \$8.64 per share, of which 982,641 shares were vested as of such date;

99,529 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2014, at an exercise price of \$15.00 per share; and

1,178,355 shares of our common stock available for future issuance under our 2012 Equity Incentive Plan, or the 2012 Equity Plan, as of December 31, 2014, plus any future increases contained in such plan in the number of shares reserved for issuance under the 2012 Equity Plan pursuant to evergreen provisions.

Unless otherwise indicated, all information in this prospectus supplement assumes:

no exercise of the outstanding options or warrants; and

no exercise by the underwriters of the option to purchase up to additional shares of our common stock.

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RISK FACTORS

An investment in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks discussed below, together with other information in this prospectus supplement, the accompanying prospectus, the information and documents incorporated by reference and in any free writing prospectus that we have authorized for use in connection with this offering. The risks described below may not be the only ones relating to our company. Additional risks that we currently believe are immaterial or risks not currently known to us may also impair our business and operations. Our business, results of operation, financial condition, cash flow and prospects and the trading price of our common stock could be harmed as a result of any of these risks, and investors may lose all or part of their investment.

We have incurred net operating losses since our inception and anticipate that we will continue to incur substantial operating losses for the foreseeable future. We may never achieve or sustain profitability, which would depress the market price of our common stock, and could cause you to lose all or a part of your investment.

We have incurred net losses from operations from our inception through September 30, 2014 of approximately \$65.4 million. We do not know whether or when we will become profitable. To date, we have not commercialized any products or generated any revenues from product sales. Our losses have resulted principally from costs incurred in development and discovery activities. We anticipate that our operating losses will substantially increase over the next several years as we execute our plan to expand our discovery, research, development and potential commercialization activities. We believe that our existing cash and cash equivalents will be sufficient to fund our operations and our capital expenditures for at least the next two years. If our cash is insufficient to meet future operating requirements, we will have to raise additional funds. If we are unable to obtain additional funds on terms favorable to us or at all, we may be required to cease or reduce our operating activities or sell or license to third parties some or all of our intellectual property. If we raise additional funds by selling additional shares of our capital stock, the ownership interests of our stockholders will be diluted. If we need to raise additional funds through the sale or license of our intellectual property, we may be unable to do so on terms favorable to us, if at all. In addition, if we do not continue to meet our diligence obligations under our license agreements for our product candidates that we have in-licensed, including SL-401 and SL-701, we will lose our rights to develop and commercialize those product candidates.

If we do not successfully develop and obtain regulatory approval for our existing and future product candidates and effectively manufacture, market and sell any product candidates that are approved, we may never generate product sales, and even if we do generate product sales, we may never achieve or sustain profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the market price of our common stock and could impair our ability to raise capital, expand our business, diversify our product offerings or continue our operations. A decline in the market price of our common stock also could cause you to lose all or a part of your investment.

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The market price of our common stock may be highly volatile and our stockholders could incur substantial losses.

The market price of our common stock may be highly volatile, and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. Since our initial public offering which occurred in January 2013, the price of our common stock has ranged from \$10.00 per share to \$47.25 per share. The stock market in general and the market for biopharmaceutical companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

results from or delays of clinical trials of our product candidates, as well as results of regulatory reviews relating to the approval of our product candidates;

our decision to initiate a clinical trial, not to initiate a clinical trial or to terminate an existing clinical trial;

our dependence on third parties, including clinical research organizations and clinical manufacturing organizations, clinical trial sponsors and clinical investigators;

our ability to commercialize our product candidates, if approved;

the results of our efforts to discover, develop, acquire or in-license additional product candidates or products;

new products, product candidates or new uses for existing products or technologies introduced or announced by our competitors and the timing of these introductions or announcements;

regulatory or legal developments in the United States and other countries;

our ability to maintain the license agreements for SL-401, SL-701 and other in-licensed product candidates;

developments or disputes concerning patent applications, issued patents or other proprietary rights;

the recruitment or departure of key scientific or management personnel;

the level of expenses related to any of our product candidates or clinical development programs;

actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;

variations in our financial results or those of companies that are perceived to be similar to us;

sales of common stock by us or our stockholders in the future, as well as the overall trading volume of our common stock;

changes in the structure of healthcare payment systems;

market conditions in the pharmaceutical and biotechnology sectors;

general economic, industry and market conditions and other factors that may be unrelated to our operating performance or the operating performance of our competitors, including changes in market valuations of similar companies; and

the other factors described in this "Risk factors" section and in our "Risk factor" sections incorporated by reference into this prospectus supplement.

Our executive officers, directors and principal stockholders maintain the ability to exert substantial influence over all matters submitted to stockholders for approval.

Our executive officers, directors and principal stockholders beneficially own shares representing approximately 45.7% of our outstanding capital stock, prior to this offering. As a result, if these stockholders were to choose to act together, they would be able to exert substantial influence over all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would exert substantial influence over the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration

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of voting power could delay or prevent an acquisition of our Company on terms that other stockholders may desire.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which they might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. Among other things, these provisions:

establish a classified board of directors such that not all members of the board are elected at one time;

allow the authorized number of our directors to be changed only by resolution of our board of directors;

limit the manner in which stockholders can remove directors from the board;

establish advance notice requirements for stockholder proposals that can be acted on at stockholder meetings and nominations to our board of directors;

require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;

limit who may call special stockholder meetings and the matters transacted at such meetings;

authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a "poison pill" that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and

require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. Any provision in our corporate charter or our bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

We have broad discretion in the use of net proceeds from this offering and may not use them effectively.

We intend to use the net proceeds from this offering for (i) clinical development of SL-401 in multiple hematologic cancer types, including a pivotal trial in BPDCN; (ii) clinical development of SL-701 in advanced brain cancer, (iii) advancement of our preclinical pipeline, including SL-501, SL-101 and SL-801, (iii) development of our drug discovery platform; and (iv) other general corporate purposes. We may also use a portion of the net proceeds to acquire assets that are complementary to our own. We regularly consider such opportunities, but are not currently negotiating any such transactions. Although we currently intend to use the net proceeds from this offering in such a manner, we will have broad discretion in the application of the net proceeds. Our failure to apply these funds effectively could affect our ability to continue to develop and commercialize our product candidates.

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If you purchase shares of common stock in this offering, you will suffer immediate dilution in the book value of your shares.

The offering price of our common stock is substantially higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value per share after this offering. To the extent outstanding options or warrants are exercised, you will incur further dilution. If you purchase shares in this offering, you will experience immediate dilution of \$ per share, representing the difference between our as adjusted net tangible book value per share after giving effect to this offering. For a further description of the dilution that you will experience immediately after this offering, see "Dilution" elsewhere in this prospectus supplement.

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SPECIAL CAUTIONARY NOTICE REGARDING FORWARD-LOOKING STATEMENTS

Certain matters discussed in this prospectus supplement and the accompanying prospectus, including matters discussed under the caption "Management's Discussion and Analysis of Financial Condition and Results of Operations," incorporated by reference herein, may constitute forward-looking statements for purposes of the Securities Act of 1933, as amended, or the Securities Act, and the Securities Exchange Act of 1934, as amended, or the Exchange Act, and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from the future results, performance or achievements expressed or implied by such forward-looking statements. The words "anticipate," "believe," "estimate," "may," "expect" and similar expressions are generally intended to identify forward-looking statements. Our actual results may differ materially from the results anticipated in these forward-looking statements due to a variety of factors, including, without limitation, those discussed under the captions "Risk factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in this prospectus supplement and the documents incorporated by reference herein, as well as other factors which may be identified from time to time in our other filings with the Securities and Exchange Commission, or the SEC, or in the documents where such forward-looking statements appear. All written or oral forward-looking statements attributable to us are expressly qualified in their entirety by these cautionary statements. Such forward-looking statements include, but are not limited to, statements about:

the success and timing of our preclinical studies and clinical trials, including, site initiation, internal review board approval, scientific review committee approval, patient accrual and trial results;

our ability to obtain and maintain regulatory approval of our product candidates for trial initiation or marketing, and the labeling under any approval we may obtain;

our plans to develop and commercialize our product candidates;

the loss of key scientific or management personnel;

the size and growth of the potential markets for our product candidates and our ability to serve those markets;

regulatory developments in the United States and foreign countries;

the rate and degree of market acceptance of any of our product candidates;

our available cash;

the accuracy of our estimates regarding expenses, future revenues, capital requirements and needs for additional financing;

our ability to obtain additional funding;

our ability to obtain and maintain intellectual property protection for our product candidates;

our ability to maintain the license agreements for SL-401, SL-701 and our other in-licensed product candidates;

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the ability of our product candidates to successfully perform in clinical trials;

the successful development of our sales and marketing capabilities;

our ability to manufacture and the performance of third-party manufacturers, clinical research organizations clinical trial sponsors and clinical trial investigators; and

our ability to successfully implement our strategy.

The forward-looking statements contained in this prospectus supplement and the accompanying prospectus reflect our views and assumptions only as of the date of this prospectus supplement. Except as required by law, we assume no responsibility for updating any forward-looking statements.

We qualify all of our forward-looking statements by these cautionary statements. In addition, with respect to all of our forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

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USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of _____ shares of our common stock in this offering will be approximately \$ _____ million, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters exercise the option to purchase an additional _____ shares of our common stock in full, we estimate that the net proceeds from this offering will be approximately \$ _____ million, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering for further clinical development of SL-401 and SL-701; advancement of our preclinical pipeline; potential asset acquisitions; development and optimization of our drug discovery platform; and for other general corporate purposes, as follows:

SL-401. We are currently advancing SL-401 through clinical trials in multiple indications including BPDCN, AML, and certain myeloproliferative neoplasms, including through pivotal studies in BPDCN. We also plan to initiate additional clinical trials with SL-401 in other hematologic cancers which may include multiple myeloma, hairy cell leukemia, and/or certain lymphomas.

SL-701. We plan to advance SL-701 through a clinical trial in adult patients with second-line GBM. The design of this trial may enable SL-701 to obtain accelerated regulatory approval or serve as the foundation for a subsequent randomized pivotal trial in this indication. We also plan to initiate a clinical trial of SL-701 in pediatric patients with high-grade glioma.

Pipeline. We plan to advance our preclinical pipeline candidates, which may include SL-501, SL-101, and SL-801. SL-501 and SL-101 are next generation IL-3R-targeted therapies. We plan to develop these compounds to treat certain oncologic indications which may include acute and/or chronic leukemias and potentially certain lymphomas, as well as certain non-oncologic autoimmune disorders which have been associated with IL-3R overexpression including systemic lupus erythematosus (SLE), scleroderma, and/or psoriasis. SL-801 is a small molecule inhibitor of nuclear transport targeting XPO1. We plan to develop SL-801 for the treatment of a variety of solid and hematologic cancers.

We expect to continue to be opportunistic and evaluate assets in an effort to expand our clinical and preclinical pipeline via strategic acquisitions. We are not currently negotiating any such transactions.

Drug Discovery (StemScreen). We intend to continue to develop and optimize our proprietary discovery platform, StemScreen , to identify additional novel CSC-targeted drug candidates.

The remaining proceeds will be used for general corporate purposes.

This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development efforts, the status of and results from clinical trials, as well as any collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering.

Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment grade, interest bearing instruments and U.S. government securities.

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

Our common stock is listed on The NASDAQ Capital Market under the symbol "STML" and has been publicly traded since January 29, 2013. Prior to that time, there was no public market for our common stock. As a result, we have not set forth quarterly information with respect to the high and low sales prices for our common stock for such period.

As of January 6, 2015, the last sale price of our common stock was \$17.79, as reported by The NASDAQ Capital Market. There were approximately 24 holders of record of our common stock as of that date.

The following table sets forth the ranges of high and low sales price per share of our common stock as reported on The NASDAQ Capital Market for the period indicated.

| | High | Low |
|--|-------------|------------|
| 2013 | | |
| First Quarter (beginning January 29, 2013) | \$ 13.95 | \$ 10.33 |
| Second Quarter | 26.97 | 11.05 |
| Third Quarter | 45.86 | 22.15 |
| Fourth Quarter | 47.25 | 18.50 |
| 2014 | | |
| First Quarter | \$ 31.48 | \$ 18.04 |
| Second Quarter | 21.28 | 12.10 |
| Third Quarter | 15.87 | 10.50 |
| Fourth Quarter | 17.69 | 11.00 |

Dividend policy

We have never declared or paid any cash dividends on our common stock and do not anticipate paying any cash dividends in the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors.

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CAPITALIZATION

The following table sets forth our capitalization as of September 30, 2014:

on an actual basis; and

on an as adjusted basis to reflect the sale of the shares of common stock offered by us in this offering (assuming no exercise of the underwriters' option to purchase additional shares) after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this table together with our financial statements and related notes and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the year ended December 31, 2013.

September 30, 2014 (unaudited)
(in thousands, except share data)

| | Actual | As Adjusted |
|---|---------------|--------------------|
| Cash, cash equivalents, short-term investments and long-term investments | \$ 65,023,374 | |
| Stockholders' equity: | | |
| Preferred stock, \$0.0001 par value per share, 5,000,000 shares authorized; none issued and outstanding, actual and as adjusted | | |
| Common stock, \$0.0001 par value per share, 33,750,000 shares authorized; 13,270,232 shares actual and shares as adjusted, issued and outstanding | | 1,327 |
| Additional paid-in capital | 114,445,189 | |
| Accumulated other comprehensive gain | | 16,108 |
| Accumulated deficit | (53,263,547) | |
| Total stockholders' equity | | 61,199,077 |
| Total capitalization | \$ 61,199,077 | |

The table above excludes the following shares as of September 30, 2014:

1,633,092 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2014, with a weighted average exercise price of \$8.61 per share; and

an aggregate of 1,203,795 shares of common stock reserved for future issuance under our stock option and incentive plans.

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DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the offering price per share of our common stock and the as adjusted net tangible book value per share of our common stock after the offering.

Our historical net tangible book value as of September 30, 2014 was \$61.2 million, or \$4.61 per share of our common stock. Historical net tangible book value per share represents the amount of our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

After giving effect to the sale of _____ shares of common stock by us, at a public offering price of \$ _____ per share, less the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro-forma as adjusted net tangible book value as of September 30, 2014 would have been \$ _____ million, or \$ _____ per share. This represents an immediate increase in pro forma net tangible book value per share of \$ _____ to existing stockholders and immediate dilution of \$ _____ in pro forma as adjusted net tangible book value per share to new investors purchasing common stock in this offering.

Dilution per share to new investors is determined by subtracting as adjusted net tangible book value per share after this offering from the offering price per share paid by new investors. The following table illustrates this dilution on a per share basis.

| | |
|---|---------|
| Assumed Offering Price Per Share | \$ |
| Historical Net Tangible Book Value Per Share as of September 30, 2014 | \$ 4.61 |
| Increase in Net Tangible Book Value Per Share Attributable to New Investors | |
| As Adjusted Net Tangible Book Value Per Share After the Offering | |
| Dilution Per Share to New Investors | |

If the underwriters exercise their option to purchase additional shares or if any additional shares are issued in connection with outstanding options, you will experience further dilution.

The table above excludes the following shares as of September 30, 2014:

1,633,092 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2014, with a weighted average exercise price of \$8.61 per share; and

an aggregate of 1,203,795 shares of common stock reserved for future issuance under our stock option and incentive plans.

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MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following is a summary of the material United States federal income tax consequences relating to the acquisition, ownership and disposition of our common stock as of the date hereof. Except where noted, this summary deals only with our common stock that is held as a capital asset (within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the "Code")) by a "non-U.S. holder" (as defined below).

For purposes of this summary, a "non-U.S. holder" means a beneficial owner of our common stock (other than a partnership or any other entity treated as a partnership for United States federal income tax purposes) that is not for United States federal income tax purposes any of the following:

an individual citizen or resident of the United States;

a corporation (or any other entity treated as a corporation for United States federal income tax purposes) created or organized in or under the laws of the United States, any state thereof or the District of Columbia;

an estate the income of which is subject to United States federal income taxation regardless of its source; or

a trust if it (1) is subject to the primary supervision of a court within the United States and one or more United States persons have the authority to control all substantial decisions of the trust or (2) has a valid election in effect under applicable United States Treasury regulations ("Treasury Regulations") to be treated as a United States person.

This summary is based upon provisions of the Code and Treasury Regulations, administrative rulings and judicial decisions currently in effect, all as of the date hereof and all subject to change at any time, possibly with retroactive effect, or to different interpretation by the Internal Revenue Service ("IRS"). This summary does not address all aspects of United States federal taxes and does not address any foreign, state, local or other tax considerations that may be relevant to non-U.S. holders in light of their personal circumstances. In addition, this summary does not represent a detailed description of the United States federal income tax consequences applicable to holders that are subject to special treatment under the United States federal income tax laws (including a holder that is a United States expatriate, "controlled foreign corporation," "passive foreign investment company," "real estate investment trust," "regulated investment company," dealer in securities or currencies, financial institution, tax-exempt entity, insurance company, person holding our common stock as part of a hedging, integrated, conversion or constructive sale transaction or a straddle, trader in securities that elects to use a mark-to-market method of accounting, person liable for the alternative minimum tax, person who acquired our common stock as compensation for services, or a partnership or other pass-through entity, or partner in a partnership or beneficial owner of a pass-through entity that holds our common stock for United States federal income tax purposes). We cannot provide assurance that a change in law will not alter significantly the tax considerations that we describe in this summary.

If a partnership (or other entity treated as a partnership for U.S. federal income tax purposes) holds our common stock, the tax treatment of a partner will generally depend upon the status of the partner and the activities of the partnership. Non-U.S. holders that are partners of a partnership holding our common stock should consult their tax advisors.

Non-U.S. holders considering the purchase of our common stock should consult their own tax advisors concerning the particular United States federal income and estate tax consequences of the ownership of our common stock, as well as the consequences arising under the laws of any other taxing jurisdiction.

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Distribution on our common stock

Distributions paid on our common stock will be taxable as dividends to the extent paid out of current or accumulated earnings and profits, as determined under United States federal income tax principles. Dividends paid to a non-U.S. holder of our common stock generally will be subject to withholding of United States federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. However, dividends that are effectively connected with the conduct of a trade or business by the non-U.S. holder within the United States (and, if required by an applicable income tax treaty, are attributable to a United States permanent establishment) are not subject to withholding tax, provided certain certification and disclosure requirements are satisfied. Instead, such dividends are subject to United States federal income tax on a net income basis in the same manner as if the non-U.S. holder were a United States person as defined under the Code. Any such effectively connected dividends received by a foreign corporation 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.

A non-U.S. holder of our common stock who wishes to claim the benefit of an applicable treaty rate and avoid backup withholding, as discussed below, for dividends will be required (a) to complete IRS Form W-8BEN (or other applicable form) and certify under penalty of perjury that such holder is not a United States person as defined under the Code and is eligible for treaty benefits or (b) if the common stock is held through certain foreign intermediaries, to satisfy the relevant certification requirements of applicable Treasury Regulations. Special certification and other requirements apply to certain non-U.S. holders that are pass-through entities rather than corporations or individuals.

A non-U.S. holder of our common stock eligible for a reduced rate of United States withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the IRS.

Gain on disposition of our common stock

Any gain realized on the disposition of our common stock by a non-U.S. holder generally will not be subject to United States federal income tax unless:

the gain is effectively connected with 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 United States permanent establishment of the non-U.S. holder);

the non-U.S. holder is an individual who is present in the United States for 183 days or more in the taxable year of that disposition, and certain other conditions are met; or

we are or have been a "United States real property holding corporation" for United States federal income tax purposes at any time during the shorter of the five-year period ending on the date of the disposition or such non-U.S. holder's holding period for our common stock and such non-U.S. holder held (at any time during the shorter of the five-year period ending on the date of the disposition or such non-U.S. holder's holding period) more than 5% of our common stock.

An individual non-U.S. holder described in the first bullet point immediately above will be subject to tax on the net gain derived from the sale under regular graduated United States federal income tax rates. If a non-U.S. holder that is a foreign corporation falls under the first bullet point immediately above, it will be subject to tax on its net gain in the same manner as if it were a United States person as defined under the Code and, in addition, may be subject to a branch profits tax equal to 30% of its effectively connected earnings and profits or at such lower rate as may be specified by an applicable income tax treaty.

We believe we have not been and are not currently a "United States real property holding corporation" for United States federal income tax purposes; however, no assurance can be given that we will not become one in the future. If, however, we are or become a "United States real property holding corporation," so long as our common stock continues to be regularly traded on an established securities market, only a non-U.S.

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holder who 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) more than 5% of our common stock will be subject to United States federal income tax on the disposition of the common stock. Non-U.S. holders should consult their own tax advisors about the consequences that could result if we are, or become, a "United States real property holding corporation."

Information reporting and backup withholding

We must report annually to the IRS and to each non-U.S. holder the amount of dividends paid to such holder and the tax withheld with respect to such dividends, regardless of whether withholding was required. Copies of the information returns reporting such dividends and withholding may also be made available to the tax authorities in the country in which the non-U.S. holder resides under the provisions of an applicable income tax treaty.

A non-U.S. holder will be subject to backup withholding for dividends paid to such holder unless such holder certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that such holder is a United States person as defined under the Code), or such holder otherwise establishes an exemption.

Information reporting and, depending on the circumstances, backup withholding will apply to the proceeds of a sale of our common stock within the United States or conducted through certain United States-related financial intermediaries, unless the beneficial owner certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that the beneficial owner is a United States person as defined under the Code), or such owner otherwise establishes an exemption.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder's United States federal income tax liability provided the required information is furnished to the IRS.

FATCA withholding requirements

Under the Foreign Account Tax Compliance Act ("FATCA") and Treasury Regulations promulgated and official guidance issued thereunder, the relevant withholding agent may be required to withhold 30% of any dividends on our common stock, and on the gross proceeds from the sales of our common stock on or after January 1, 2017, in each case, to (i) a foreign financial institution unless such foreign financial institution agrees to verify, report and disclose its U.S. accountholders and meets certain other specified requirements or (ii) a non-financial foreign entity that is the beneficial owner of the payment unless such entity certifies that it does not have any substantial United States owners or provides the name, address and taxpayer identification number of each substantial United States owner and such entity meets certain other specified requirements. In certain cases, the relevant foreign financial institution or non-financial foreign entity may qualify for an exemption from, or be deemed to be in compliance with, these rules. Certain countries have entered into agreements with the United States that supplement and modify these rules. Non-U.S. holders should consult their own tax advisors regarding this legislation and whether it may be relevant to their ownership and disposition of our common stock.

Table of Contents**UNDERWRITING**

Subject to the terms and conditions set forth in the underwriting agreement, dated January , 2015, between us and Jefferies LLC, as the representative of the underwriters named below. Jefferies LLC and Cowen and Company, LLC are acting as the joint book-running managers of this offering. We have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us the respective number of shares of common stock shown opposite its name below:

| Underwriter | Number of Shares |
|------------------------|-----------------------------|
| Jefferies LLC | \$ |
| Cowen and Company, LLC | |
| Aegis Capital Corp. | |
| Total | \$ |

The underwriters are committed to purchase all the shares of common stock offered by us if they purchase any shares. The underwriting agreement also provides that if an underwriter defaults, the purchase commitments of nondefaulting underwriters may be increased or the offering may be terminated. The underwriters are not obligated to purchase the shares of common stock covered by the option to purchase additional shares described below. The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, and other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officers' certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the initial public offering price set forth on the cover page of this prospectus supplement and to certain dealers, which may include the underwriters, at that price less a concession not in excess of \$ per share of common stock. The underwriters may allow, and certain dealers may reallow, a discount from the concession not in excess of \$ per share of common stock to certain brokers and dealers. After the offering, the public offering price, concession and reallowance to dealers may be reduced by the representative. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus supplement.

The following table shows the public offering price, the underwriting discounts and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such

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amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

| | Per Share | | Total | |
|---|--|---|--|---|
| | Without Option to Purchase Additional Shares | With Option to Purchase Additional Shares | Without Option to Purchase Additional Shares | With Option to Purchase Additional Shares |
| Public offering price | \$ | \$ | \$ | \$ |
| Underwriting discounts and commissions paid by us | \$ | \$ | \$ | \$ |
| Proceeds to us, before expenses | \$ | \$ | \$ | \$ |

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately \$.

We have agreed to reimburse the underwriters for certain expenses in an amount of up to \$50,000 in the aggregate.

Listing

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

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase, from time to time, in whole or in part, up to an aggregate of additional shares of our common stock from us at the initial public offering price set forth on the cover page of this prospectus supplement, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter's initial purchase commitment as indicated in the table above.

No Sales of Similar Securities

We and our officers and directors have entered into lock-up agreements with the underwriters. Under these agreements, we and these other individuals have agreed, subject to specified exceptions, not to sell or transfer any common stock or securities convertible into, or exchangeable or exercisable for, common stock, during a period ending 90 days after the date of this prospectus, without first obtaining the written consent of representatives of the underwriters.

Specifically, we and these other individuals have agreed not to:

offer, pledge, 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;

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 above is to be settled by delivery of common stock or other securities, in cash or otherwise;

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make any demand for or exercise any right with respect to the registration of any shares of our common stock or any securities convertible into or exchangeable or exercisable for shares of our common stock; or

publicly announce an intention to do any of the foregoing.

The restrictions described above do not apply to:

the sale of shares of common stock to the underwriters pursuant to the underwriting agreement;

the issuance by us of shares of common stock upon the exercise of an option or the conversion of a security outstanding on the date of this prospectus of which the underwriters have been advised in writing or that is described in this prospectus;

the grant by us of stock options or other stock-based awards, or the issuance of shares of common stock upon exercise thereof, to eligible participants pursuant to employee benefit or equity incentive plans described in this prospectus, provided that, prior to the grant of any such stock options or other stock-based awards that vest within the restricted period, each recipient of such grant shall sign and deliver a lock-up agreement agreeing to be subject to the restrictions on transfer described above;

the establishment of a 10b5-1 trading plan under the Exchange Act by a security holder for the sale of shares of common stock, provided that such plan does not provide for the transfer of common stock during the restricted period;

transfers by security holders of shares of common stock or other securities as a bona fide gift or by will or intestacy;

transfers by distribution by security holders of shares of common stock or other securities to partners, members, or stockholders of the security holder; or

transfers by security holders of shares of common stock or other securities to any trust for the direct or indirect benefit of the security holder or the immediate family of the security holder;

provided that in the case of each of the preceding three types of transactions, the transfer does not involve a disposition for value and each transferee or distributee signs and delivers a lock-up agreement agreeing to be subject to the restrictions on transfer described above.

The 90-day restricted period is subject to extension if (1) 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 (2) prior to 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 the lock-up agreements will 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.

Stabilization

The underwriters have advised us that they, pursuant to Regulation M under the Securities Exchange Act of 1934, as amended, and certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either "covered" short sales or "naked" short sales.

"Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our

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common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for

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purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares.

"Naked" short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on The NASDAQ Capital Market in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Electronic Distribution

A prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus, has not been approved and/or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriter and certain of its affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriter and certain of its affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

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In the ordinary course of their various business activities, the underwriters and certain of their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own accounts and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

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NOTICE TO INVESTORS

European Economic Area

In relation to each member state of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State), an offer to the public of any shares of our common stock which are the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus may not be made in that Relevant Member State except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

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

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

For the purposes of this provision, the expression an "offer of shares of our common stock to the public" in relation to the shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the shares of our common stock to be offered so as to enable an investor to decide to purchase or subscribe to the shares of our common stock, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

Switzerland

The common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (SIX) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus supplement and the accompanying prospectus have been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus supplement nor any other offering or marketing material relating to the common stock or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus supplement nor any accompanying prospectus nor any other offering or marketing material relating to the offering, the Company or the common stock have been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus supplement and the accompanying prospectus will not be filed with, and the offer of common stock will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA (FINMA), and the offer of common stock has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

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United Kingdom

This prospectus supplement and the accompanying prospectus is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (Order) and/or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order and other persons to whom it may lawfully be communicated (each such person being referred to as a "relevant person").

This prospectus supplement and the accompanying prospectus and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

Italy

This prospectus supplement and the accompanying prospectus have not been and will not be filed with or cleared by the Italian securities exchange commission, Commissione Nazionale per le società e la Borsa (CONSOB), pursuant to Legislative Decree No. 58 of 24 February 1998, as amended (Finance Law), and to CONSOB Regulation No. 11971 of 14 May 1999, as amended (Issuers Regulation). Accordingly, copies of this prospectus supplement and the accompanying prospectus or any other document relating to our common stock may not be distributed, made available or advertised in Italy, nor may our common stock be offered, purchased, sold, promoted, advertised or delivered, directly or indirectly, to the public other than (i) to Professional Investors (such being the persons and entities as defined pursuant to article 31(2) of CONSOB Regulation No. 11522 of 1 July 1998, as amended, the Intermediaries Regulation) pursuant to article 100 of the Finance Law; (ii) to prospective investors where the offer of our common stock relies on the exemption from the investment solicitation rules pursuant to, and in compliance with, the conditions set out by article 100 of the Finance Law and article 33 of the Issuers Regulation, or by any applicable exemption; provided that any such offer, sale, promotion, advertising or delivery of our common stock or distribution of this prospectus supplement and the accompanying prospectus, or any part thereof, or of any other document or material relating to our common stock in Italy is made: (a) by investment firms, banks or financial intermediaries authorized to carry out such activities in the Republic of Italy in accordance with the Finance Law, the Issuers Regulation, Legislative Decree No. 385 of 1 September 1993, as amended (Banking Law), the Intermediaries Regulation, and any other applicable laws and regulations; and (b) in compliance with any applicable notification requirement or duty which may, from time to time, be imposed by CONSOB, Bank of Italy or by any other competent authority.

Germany

Any offer or solicitation of securities within Germany must be in full compliance with the German Securities Prospectus Act (Wertpapierprospektgesetz – WpPG). The offer and solicitation of securities to the public in Germany requires the publication of a prospectus that has to be filed with and approved by the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht – BaFin). This prospectus supplement and the accompanying prospectus have not been and will not be submitted for filing and approval to the BaFin and, consequently, will not be published. Therefore, this prospectus supplement does not constitute a public offer under the German Securities Prospectus Act (Wertpapierprospektgesetz). This prospectus supplement, the accompanying prospectus and any other document relating to our common stock, as well as any information contained therein, must therefore not be supplied to the public in Germany or used in connection with any offer for subscription of our common stock to the public in Germany, any public marketing of our common stock or any public solicitation for offers to subscribe for or otherwise acquire our common stock. This prospectus supplement, the accompanying prospectus and other offering materials relating to the offer of our common stock are strictly confidential and may not be distributed to any person or entity other than the designated recipients hereof.

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France

This prospectus supplement and the accompanying prospectus have not been prepared in the context of a public offering of financial securities in France within the meaning of Article L.411-1 of the French Code Monétaire et Financier and Title I of Book II of the Règlement Général of the Autorité des marchés financiers (the "AMF") and therefore has not been and will not be filed with the AMF for prior approval or submitted for clearance to the AMF. Consequently, the shares of our common stock may not be, directly or indirectly, offered or sold to the public in France and offers and sales of the shares of our common stock may only be made in France to qualified investors (investisseurs qualifiés) acting for their own, as defined in and in accordance with Articles L.411-2 and D.411-1 to D.411-4, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code Monétaire et Financier. None of this prospectus supplement, the accompanying prospectus or any other offering material may be released, issued or distributed to the public in France or used in connection with any offer for subscription on sale of the shares of our common stock to the public in France. The subsequent direct or indirect retransfer of the shares of our common stock to the public in France may only be made in compliance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code Monétaire et Financier.

Sweden

This is not a prospectus under, and has not been prepared in accordance with the prospectus requirements provided for in, the Swedish Financial Instruments Trading Act [lagen (1991:980) om handel med finansiella instrument] nor any other Swedish enactment. Neither the Swedish Financial Supervisory Authority nor any other Swedish public body has examined, approved, or registered this document.

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LEGAL MATTERS

The validity of the common stock offered by this prospectus supplement and the accompanying prospectus will be passed upon for us by Alston & Bird LLP, New York, New York. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York, is counsel for the underwriters in connection with this offering.

EXPERTS

Our financial statements at December 31, 2013 and 2012, and for each of the three years in the period ended December 31, 2013, and the period from August 8, 2003 (Inception) to December 31, 2013, incorporated by reference in this prospectus supplement from Stemline Therapeutics, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2013, have been incorporated herein by reference in reliance on the report of Ernst & Young LLP, independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements, and other information with the SEC. You may read and copy any documents we have filed with the SEC at its Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. We also file these documents with the SEC electronically. You can access the electronic versions of these filings on the SEC's Internet website found at <http://www.sec.gov>. You can also obtain copies of materials we file with the SEC, free of charge, from our Internet website found at www.stemline.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus. Our stock is listed on The NASDAQ Capital Market under the symbol "STML."

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that 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 part of this prospectus supplement and the accompanying prospectus. Information contained in this prospectus supplement and the accompanying prospectus, and information that we file with the SEC in the future and incorporate by reference in this prospectus supplement and the accompanying prospectus, will automatically update and supersede this information. We incorporate by reference in this prospectus supplement and the accompanying prospectus the documents listed below, any future documents 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 and until the completion or termination of this offering (in each case, except for the information in any of the foregoing Current Reports on Form 8-K furnished under Item 2.02 or Item 7.01 thereof):

We incorporate by reference into this prospectus supplement the information or documents listed below that we have filed with the SEC (Commission File No. 001-35619).

our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed on March 31, 2014;

our Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed on November 14, 2014;

our Quarterly Report on Form 10-Q for the quarter ended June 30, 2014, filed on August 14, 2014;

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our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014, filed on May 15, 2014;

our Definitive Proxy Statement on Schedule 14A filed on April 30, 2014;

our Current Reports on Form 8-K filed on January 23, 2014, April 8, 2014, June 23, 2014, July 28, 2014, August 14, 2014, November 12, 2014, January 7, 2015; and

the description of our common stock contained in our Registration Statement on Form 8-A filed on July 30, 2012, including any amendment or report filed for the purpose of updating such description.

You may request, orally or in writing, a copy of any or all of the documents incorporated herein by reference. These documents will be provided to you at no cost, by contacting: Stemline Therapeutics, Inc., 750 Lexington Avenue, Eleventh Floor, New York, NY 10022, (646) 502-2311, email address: info@stemline.com. In addition, copies of any or all of the documents incorporated herein by reference may be accessed at our website at www.stemline.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus.

You should rely only on information contained in, or incorporated by reference into, this prospectus supplement. We have not authorized anyone to provide you with information different from that contained in this prospectus supplement or incorporated by reference in this prospectus supplement.

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PROSPECTUS

\$150,000,000

Stemline Therapeutics, Inc.

**Common Stock
Preferred Stock
Warrants
Debt Securities
Units**

The following are types of securities that we may offer, issue and sell from time to time, together or separately:

shares of our common stock;

shares of our preferred stock;

warrants;

debt securities; and

units consisting of any combination of our common stock, preferred stock, warrants or debt securities.

We may offer these securities in amounts, at prices, and on terms determined at the time of offering. We may sell these securities directly to you through agents we select or through underwriters and dealers we select. If we use agents, underwriters or dealers to sell these securities, we will name them and describe their compensation in a prospectus supplement.

This prospectus provides a general description of the securities we may offer. Each time we sell securities, we will provide specific terms of the securities offered in a supplement to this prospectus. The prospectus supplement may also add, update or change information contained in this prospectus. You should read this prospectus and the applicable prospectus supplement carefully, together with additional information described under the heading "Where You Can Find More Information," before you invest in any securities. This prospectus may not be used to consummate a sale of securities unless accompanied by the applicable prospectus supplement.

Our common stock is traded on the NASDAQ Capital Market under the symbol "STML." On January 29, 2014, the per share closing price of our common stock as reported on the NASDAQ Capital Market was \$25.02 per share.

Investing in our securities involves certain risks. See "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2012, as well as our Quarterly Reports on Form 10-Q for the periods ended March 31, 2013, June 30, 2013 and September 30, 2013, which have been filed with the SEC and are incorporated by reference into this prospectus. You should read the entire prospectus carefully before you make your investment decision.

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

The date of this prospectus is February 12, 2014.

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STEMLINE THERAPEUTICS, INC.

We are a clinical stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing proprietary therapeutics that target both cancer stem cells, or CSCs, and tumor bulk. We are currently developing two clinical stage product candidates, SL-401 and SL-701. SL-401 is a targeted therapy directed to the interleukin-3 receptors, or IL-3R, and is currently being developed for the treatment of several hematologic cancers including blastic plasmacytoid dendritic cell neoplasm, or BPDCN, and other rare IL-3R+ cancers of unmet medical need, as well as acute myeloid leukemia, or AML, and multiple myeloma, or MM. SL-401 has received Orphan Drug designation from the Food and Drug Administration (FDA) for the treatment of BPDCN and AML. SL-701 is a subcutaneously administered therapeutic cancer vaccine comprised of multiple synthetic peptides, and is currently being developed for the treatment of advanced adult and pediatric brain cancer. In completed Phase 1/2 clinical trials, both SL-401 and SL-701 have demonstrated single agent efficacy, including durable complete responses, and longer overall survival compared with historical data in heavily pretreated patients.

Based upon favorable clinical data observed to date with SL-401 and SL-701 across several indications, we plan to initiate multiple clinical trials with SL-401 in a variety of hematologic cancers and with SL-701 in advanced adult and pediatric brain cancers. These include pivotal programs with SL-401 in BPDCN and late-stage AML. We also plan to initiate Phase 1/2 trials in additional hematologic indications including several rare malignancies, multiple myeloma, and earlier stages of AML. In addition, we plan to initiate a Phase 2 trial of SL-701 in adult patients with glioblastoma multiforme, or GBM, who failed one previous treatment, i.e., second line GBM; a study which could potentially provide the basis for accelerated approval. In addition, we plan to initiate a Phase 2 trial of SL-701 in pediatric patients with brainstem and non-brainstem high-grade glioma.

In addition to our clinical programs, we have also built 1) a robust preclinical pipeline, including next generation product candidates, SL-501 and SL-101, directed to the same clinically validated IL-3R target as SL-401; 2) an innovative drug discovery platform ("StemScreen®"); and 3) an extensive intellectual property portfolio which includes some of the earliest patents in the CSC area. We believe that these, in concert with our active clinical stage compounds, position us for growth into a leading biopharmaceutical company.

Our principal executive offices are located at 750 Lexington Avenue, Eleventh Floor, New York, New York 10022, and our telephone number is (646) 502-2311. We maintain a website at www.stemline.com and our e-mail address is info@stemline.com. Our website, and the information contained on it, are not to be considered part of this prospectus.

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THE OFFERING

| | |
|-----------------|---|
| Use of Proceeds | We intend to use the net proceeds of any offering as set forth in the applicable prospectus supplement. |
| Nasdaq Symbol | STML |

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FORWARD-LOOKING STATEMENTS

This prospectus includes statements that are, or may be deemed, "forward-looking statements." In some cases, these forward-looking statements can be identified by the use of forward-looking terminology, including the terms "believes," "estimates," "anticipates," "expects," "plans," "intends," "may," "could," "might," "will," "should," "approximately" or, in each case, their negative or other variations thereon or comparable terminology, although not all forward-looking statements contain these words. They appear in a number of places throughout this prospectus (and the documents incorporated by reference into this prospectus) and include statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things, our ongoing and planned discovery and development of drugs targeting cancer stem cells, the strength and breadth of our intellectual property, our ongoing and planned preclinical studies and clinical trials, the timing of and our ability to make regulatory filings and obtain and maintain regulatory approvals for our product candidates, the degree of clinical utility of our product candidates, particularly in specific patient populations, expectations regarding clinical trial data, our results of operations, financial condition, liquidity, prospects, growth and strategies, the length of time that we will be able to continue to fund our operating expenses and capital expenditures, our expected financing needs and sources of financing, the industry in which we operate and the trends that may affect the industry or us.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events, competitive dynamics, and healthcare, regulatory and scientific developments and depend on the economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus (and the documents incorporated by reference into this prospectus), we caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this prospectus. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this prospectus (and the documents incorporated by reference into this prospectus), they may not be predictive of results or developments in future periods.

WHERE YOU CAN FIND MORE INFORMATION

We file reports with the SEC on an annual basis using Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K. You may read and copy any such reports and amendments thereto at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549 on official business days during the hours of 10:00 a.m. to 3:00 p.m. Please call the SEC at 1-800-SEC-0330 for information on the Public Reference Room. Additionally, the SEC maintains a website that contains annual, quarterly, and current reports, proxy statements, and other information that issuers (including us) file electronically with the SEC. The SEC's website address is <http://www.sec.gov>. You can also obtain copies of materials we file with the SEC from our Internet website found at www.stemline.com. Our stock is quoted on the NASDAQ Capital Market under the symbol "STML."

IMPORTANT INFORMATION ABOUT THIS PROSPECTUS

This prospectus is part of a "shelf" registration statement that we filed with the SEC. By using a shelf registration statement, we may sell our securities, as described in this prospectus, from time to time in one or more offerings. We may use the shelf registration statement to offer and sell securities described in this prospectus. Each time we sell securities, we will provide a prospectus supplement to this prospectus that contains specific information about the terms of such offering. The supplement may also add, update or change information contained in this prospectus. Before purchasing any securities, you should carefully read both this prospectus and any supplement, together with the

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additional information incorporated into this prospectus or 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 any prospectus supplement. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We will not make an offer to sell securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus, as well as information we previously filed with the SEC and have incorporated by reference, is accurate as of the date on the front cover of this prospectus only, or when such document was filed with the SEC. Our business, financial condition, results of operations and prospects may have changed since the relevant date.

We will not use this prospectus to offer and sell securities unless it is accompanied by a prospectus supplement that more fully describes the terms of the offering.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus the information we file with the SEC. This means that we can disclose important information to you by referring you to those documents without restating that information in this document. The information incorporated by reference into this prospectus is considered to be part of this prospectus, and information we file with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, after the date of this prospectus and prior to the termination of this offering, will automatically update and supersede the information contained in this prospectus and documents listed below. We incorporate by reference into this prospectus the documents listed below, except to the extent information in those documents differs from information contained in this prospectus, and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including exhibits:

- (a) Our Annual Report on Form 10-K for the year ended December 31, 2012;
- (b) Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2013, June 30, 2013, and September 30, 2013;
- (c) Our Current Reports on Form 8-K filed with the SEC on February 6, 2013, March 29, 2013, June 25, 2013, November 15, 2013, and January 23, 2014;
- (d) Our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 30, 2013; and
- (e) Description of our common stock, which is contained in the Registration Statement on Form 8-A, as filed with the SEC on July 30, 2012, as supplemented by the Description of Common Stock found on page 5 of the base prospectus and including any amendments or reports filed for the purpose of updating such description.

We will provide to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, a copy of any or all of the information that we have incorporated by reference into this prospectus. We will provide this information upon written or oral request at no cost to the requester. You may request this information by contacting our corporate headquarters at the following address: 750 Lexington Avenue, Eleventh Floor, New York, New York 10022, Attn: Chief Accounting Officer, or by calling (646) 502-2311.

Table of Contents**RATIO OF EARNINGS/ DEFICIENCY TO FIXED CHARGES**

The following table sets forth, for each of the periods presented, our ratio of earnings to fixed charges and our coverage deficiency. You should read this table in conjunction with the financial statements and notes incorporated by reference in this prospectus.

| | Nine Months Ended Year Ended Year Ended Year Ended Year Ended Year Ended September 30, December 31, December 31, December 31, December 31, December 31, 2013 2012 2011 2010 2009 2008 | | | | | |
|---------------------------------------|--|---------|---------|---------|---------|---------|
| (in thousands) | | | | | | |
| Net loss | (16,530) | (6,275) | (2,755) | (1,801) | (1,778) | (1,820) |
| Ratio of earnings to fixed charges(1) | N/A | N/A | N/A | N/A | N/A | N/A |
| Coverage deficiency | (16,530) | (6,275) | (2,755) | (1,801) | (1,778) | (1,820) |

(1)

We did not record earnings for the nine months ended September 30, 2013, and for the years ended December 31, 2012, 2011, 2010, 2009 and 2008. Accordingly, our earnings were insufficient to cover fixed charges for such periods and we are unable to disclose a ratio of earnings to fixed charges for such periods.

DESCRIPTION OF SECURITIES WE MAY OFFER

This prospectus contains summary descriptions of the securities we may offer from time to time. These summary descriptions are not meant to be complete descriptions of each security. The particular terms of any security will be described in the related prospectus supplement.

DESCRIPTION OF COMMON STOCK

The following summary of the terms of our common stock may not be complete and is subject to, and qualified in its entirety by reference to, the terms and provisions of our restated certificate of incorporation and our amended and restated by-laws. You should refer to, and read this summary together with, our restated certificate of incorporation and amended and restated by-laws to review all of the terms of our common stock that may be important to you.

Common Stock

Under the terms of our restated certificate of incorporation, we are authorized to issue a total of 33,750,000 shares of common stock, par value \$0.0001 per share. As of January 29, 2014, we had issued and outstanding 13,170,736 shares of our common stock. All outstanding shares of our common stock are fully paid and nonassessable. Our common stock is listed on The NASDAQ Capital Market and trades under the symbol "STML" and has been publicly traded since January 29, 2013. Prior to that time, there was no public market for our common stock.

Holders

The number of record holders of our 13,170,736 shares of outstanding common stock as of January 29, 2014 was 24. This number does not include beneficial owners whose shares are held by nominees in street name.

Dividends

We have never declared or paid any cash dividends on our common stock and do not anticipate paying any cash dividends in the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors.

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Voting Rights

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Holders of our common stock are not entitled to vote on any amendment to our restated certificate of incorporation that relates solely to the terms of one or more outstanding series of preferred stock if the holders of such affected series are entitled, either separately or together as a class with the holders of one or more other such series, to vote thereon pursuant to the restated certificate of incorporation. An election of directors by our stockholders will be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights or other rights of outstanding preferred stock.

Liquidation and Dissolution

In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the preferential or other rights of any outstanding preferred stock. Holders of common stock have no preemptive, subscription, redemption, conversion or similar rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Transfer Agent

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

Anti-Takeover Provisions

We are subject to Section 203 of the Delaware General Corporation Law. Subject to certain exceptions, Section 203 prevents a publicly held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that the person became an interested stockholder, unless the interested stockholder attained such status with the approval of our board of directors or unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger or consolidation involving us and the "interested stockholder" and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

Staggered board; removal of directors

Our restated certificate of incorporation and our amended and restated by-laws divide our board of directors into three classes with staggered three-year terms. In addition, a director may be removed only for cause and only by the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in an annual election of directors. Any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office. The classification of our board of directors and the limitations on the removal of directors and filling of vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our Company.

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Super-majority voting

The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or by-laws, unless a corporation's certificate of incorporation or by-laws, as the case may be, requires a greater percentage. Our amended and restated by-laws may be amended or repealed by a majority vote of our board of directors or the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in an annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes which all our stockholders would be entitled to cast in an election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described in the prior two paragraphs.

Stockholder action; special meeting of stockholders

Our restated certificate of incorporation provides that any action required or permitted to be taken by our stockholders must be effected at a duly called annual or special meeting of such stockholders and may not be effected by any consent in writing by such stockholders. Our restated certificate of incorporation and our amended and restated by-laws also provide that, except as otherwise required by law, special meetings of our stockholders can only be called by our chairman of the board, our chief executive officer or our board of directors and business transacted at any special meeting is limited to the stated purposes of the meeting.

Authorized but unissued shares

The authorized but unissued shares of common stock and preferred stock are available for future issuance without stockholder approval, subject to any limitations imposed by the listing standards of The NASDAQ Capital Market. These additional shares may be used for a variety of corporate finance transactions, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could make more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

DESCRIPTION OF PREFERRED STOCK

Under the terms of our restated certificate of incorporation, our board of directors is authorized to issue up to 5,000,000 shares of preferred stock, par value \$0.0001 per share. Our board of directors may issues shares of preferred stock in one or more series without stockholder approval, and has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock. We may amend from time to time our restated certificate of incorporation to increase the number of authorized shares of preferred stock. Any such amendment would require the approval of the holders of a majority of the voting power of the shares entitled to vote thereon. As of the date of this prospectus, we have 5,000,000 shares of preferred shares authorized, but no shares of preferred stock outstanding.

It is not possible to state the actual effect of the issuance of any shares of preferred stock upon the rights of the holders of common stock until the board of directors determines the specific rights of the holders of preferred stock. However, effects of the issuance of preferred stock include restricting dividends on common stock, diluting the voting power of common stock, impairing the liquidation rights of common stock, and making it more difficult for a third party to acquire us, which could have the effect of discouraging a third party from acquiring, or deterring a third party from paying a premium to acquire, a majority of our outstanding voting stock.

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The particular terms of any series of preferred stock being offered by us will be described in the prospectus supplement relating to that series of preferred stock. Those terms may include:

the title and liquidation preference per share of the preferred stock and the number of shares offered;

the purchase price of the preferred stock;

the dividend rate (or method of calculation);

the dates on which dividends will be paid and the date from which dividends will begin to accumulate;

any redemption or sinking fund provisions of the preferred stock;

any listing of the preferred stock on any securities exchange or market;

any conversion provisions of the preferred stock;

the voting rights, if any, of the preferred stock; and

any additional dividend, liquidation, redemption, sinking fund and other rights, preferences, privileges, limitations and restrictions of the preferred stock.

The preferred stock will, when issued, be fully paid and non-assessable.

DESCRIPTION OF WARRANTS

We may issue warrants to purchase shares of our common stock and/or preferred stock in one or more series together with other securities or separately, as described in each applicable prospectus supplement.

The prospectus supplement relating to any warrants we offer will include specific terms relating to the offering. These terms will include some or all of the following:

the title of the warrants;

the aggregate number of warrants offered;

the designation, number and terms of the shares of common stock purchasable upon exercise of the warrants and procedures by which those numbers may be adjusted;

the exercise price of the warrants;

the dates or periods during which the warrants are exercisable;

the designation and terms of any securities with which the warrants are issued;

if the warrants are issued as a unit with another security, the date on and after which the warrants and the other security will be separately transferable;

if the exercise price is not payable in U.S. dollars, the foreign currency, currency unit or composite currency in which the exercise price is denominated;

any minimum or maximum amount of warrants that may be exercised at any one time;

any terms relating to the modification of the warrants;

any terms, procedures and limitations relating to the transferability, exchange or exercise of the warrants; and

any other specific terms of the warrants.

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DESCRIPTION OF DEBT SECURITIES

We may offer debt securities which may be senior, subordinated or junior subordinated and may be convertible. Unless otherwise specified in the applicable prospectus supplement, our debt securities will be issued in one or more series under an indenture to be entered into between us and a trustee. We will issue the debt securities offered by this prospectus and any accompanying prospectus supplement under an indenture to be entered into between us and the trustee identified in the applicable prospectus supplement. The terms of the debt securities will include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the indenture. We have filed a copy of the form of indenture as an exhibit to the registration statement in which this prospectus is included. The indenture will be subject to and governed by the terms of the Trust Indenture Act of 1939.

The following description briefly sets forth certain general terms and provisions of the debt securities that we may offer. The particular terms of the debt securities offered by any prospectus supplement and the extent, if any, to which these general provisions may apply to the debt securities, will be described in the related prospectus supplement. Accordingly, for a description of the terms of a particular issue of debt securities, reference must be made to both the related prospectus supplement and to the following description.

Debt Securities

The aggregate principal amount of debt securities that may be issued under the indenture is unlimited. The debt securities may be issued in one or more series as may be authorized from time to time pursuant to a supplemental indenture entered into between us and the trustee or an order delivered by us to the trustee. For each series of debt securities we offer, a prospectus supplement accompanying this prospectus will describe the following terms and conditions of the series of debt securities that we are offering, to the extent applicable:

title and aggregate principal amount;

whether the debt securities will be senior, subordinated or junior subordinated;

applicable subordination provisions, if any;

provisions regarding whether the debt securities will be convertible or exchangeable into other securities or property of the Company or any other person;

percentage or percentages of principal amount at which the debt securities will be issued;

maturity date(s);

interest rate(s) or the method for determining the interest rate(s);

whether interest on the debt securities will be payable in cash or additional debt securities of the same series;

dates on which interest will accrue or the method for determining dates on which interest will accrue and dates on which interest will be payable;

whether the amount of payment of principal of, premium, if any, or interest on the debt securities may be determined with reference to an index, formula or other method;

redemption, repurchase or early repayment provisions, including our obligation or right to redeem, purchase or repay debt securities under a sinking fund, amortization or analogous provision;

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if other than the debt securities' principal amount, the portion of the principal amount of the debt securities that will be payable upon declaration of acceleration of the maturity;

authorized denominations;

form;

amount of discount or premium, if any, with which the debt securities will be issued, including whether the debt securities will be issued as "original issue discount" securities;

the place or places where the principal of, premium, if any, and interest on the debt securities will be payable;

where the debt securities may be presented for registration of transfer, exchange or conversion;

the place or places where notices and demands to or upon the Company in respect of the debt securities may be made;

whether the debt securities will be issued in whole or in part in the form of one or more global securities;

if the debt securities will be issued in whole or in part in the form of a book-entry security, the depository or its nominee with respect to the debt securities and the circumstances under which the book-entry security may be registered for transfer or exchange or authenticated and delivered in the name of a person other than the depository or its nominee;

whether a temporary security is to be issued with respect to such series and whether any interest payable prior to the issuance of definitive securities of the series will be credited to the account of the persons entitled thereto;

the terms upon which beneficial interests in a temporary global security may be exchanged in whole or in part for beneficial interests in a definitive global security or for individual definitive securities;

the guarantors, if any, of the debt securities, and the extent of the guarantees and any additions or changes to permit or facilitate guarantees of such debt securities;

any covenants applicable to the particular debt securities being issued;

any defaults and events of default applicable to the debt securities, including the remedies available in connection therewith;

currency, currencies or currency units in which the purchase price for, the principal of and any premium and any interest on, such debt securities will be payable;

time period within which, the manner in which and the terms and conditions upon which the Company or the purchaser of the debt securities can select the payment currency;

securities exchange(s) on which the debt securities will be listed, if any;

whether any underwriter(s) will act as market maker(s) for the debt securities;

extent to which a secondary market for the debt securities is expected to develop;

provisions relating to defeasance;

provisions relating to satisfaction and discharge of the indenture;

any restrictions or conditions on the transferability of the debt securities;

provisions relating to the modification of the indenture both with and without the consent of holders of debt securities issued under the indenture;

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any addition or change in the provisions related to compensation and reimbursement of the trustee;

provisions, if any, granting special rights to holders upon the occurrence of specified events;

whether the debt securities will be secured or unsecured, and, if secured, the terms upon which the debt securities will be secured and any other additions or changes relating to such security; and

any other terms of the debt securities that are not inconsistent with the provisions of the Trust Indenture Act (but may modify, amend, supplement or delete any of the terms of the indenture with respect to such series of debt securities).

General

One or more series of debt securities may be sold as "original issue discount" securities. These debt securities would be sold at a substantial discount below their stated principal amount, bearing no interest or interest at a rate which at the time of issuance is below market rates. One or more series of debt securities may be variable rate debt securities that may be exchanged for fixed rate debt securities.

United States federal income tax consequences and special considerations, if any, applicable to any such series will be described in the applicable prospectus supplement.

Debt securities may be issued where the amount of principal and/or interest payable is determined by reference to one or more currency exchange rates, commodity prices, equity indices or other factors. Holders of such debt securities may receive a principal amount or a payment of interest that is greater than or less than the amount of principal or interest otherwise payable on such dates, depending upon the value of the applicable currencies, commodities, equity indices or other factors. Information as to the methods for determining the amount of principal or interest, if any, payable on any date, the currencies, commodities, equity indices or other factors to which the amount payable on such date is linked and certain additional United States federal income tax considerations will be set forth in the applicable prospectus supplement.

The term "debt securities" includes debt securities denominated in U.S. dollars or, if specified in the applicable prospectus supplement, in any other freely transferable currency or units based on or relating to foreign currencies.

We expect most debt securities to be issued in fully registered form without coupons and in denominations of \$2,000 and any integral multiples thereof. Subject to the limitations provided in the indenture and in the prospectus supplement, debt securities that are issued in registered form may be transferred or exchanged at the principal corporate trust office of the trustee, without the payment of any service charge, other than any tax or other governmental charge payable in connection therewith.

Global Securities

The debt securities of a series may be issued in whole or in part in the form of one or more global securities that will be deposited with, or on behalf of, a depositary identified in the prospectus supplement. Global securities will be issued in registered form and in either temporary or definitive form. Unless and until it is exchanged in whole or in part for the individual debt securities, a global security may not be transferred except as a whole by the depositary for such global security to a nominee of such depositary or by a nominee of such depositary to such depositary or another nominee of such depositary or by such depositary or any such nominee to a successor of such depositary or a nominee of such successor. The specific terms of the depositary arrangement with respect to any debt securities of a series and the rights of and limitations upon owners of beneficial interests in a global security will be described in the applicable prospectus supplement.

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Governing Law

The indenture and the debt securities shall be construed in accordance with and governed by the laws of the State of New York.

DESCRIPTION OF UNITS

We may issue, in one more series, units comprised of shares of our common stock or preferred stock, warrants to purchase common stock or preferred stock, debt securities or any combination of those securities. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We may evidence units by unit certificates that we issue under a separate agreement. We may issue the units under a unit agreement between us and one or more unit agents. If we elect to enter into a unit agreement with a unit agent, the unit agent will act solely as our agent in connection with the units and will not assume any obligation or relationship of agency or trust for or with any registered holders of units or beneficial owners of units. We will indicate the name and address and other information regarding the unit agent in the applicable prospectus supplement relating to a particular series of units if we elect to use a unit agent.

We will describe in the applicable prospectus supplement the terms of the series of units being offered, including:

the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;

any provisions of the governing unit agreement that differ from those described herein; and

any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The other provisions regarding our common stock, preferred stock, warrants and debt securities as described in this section will apply to each unit to the extent such unit consists of shares of our common stock, preferred stock, warrants and/or debt securities.

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PLAN OF DISTRIBUTION

We may sell the securities covered in this prospectus from time to time in one or more of the following ways:

through underwriters or dealers;

in short or long transactions;

directly to a limited number of purchasers or to a single purchaser;

through agents; or

through a combination of any of these methods of sale.

Each time that we use this prospectus to sell securities, we will also provide a prospectus supplement that contains the specific terms of the offering. The prospectus supplement will set forth the terms of the offering of the securities, including:

the name or names of any underwriters, dealers or agents and the amounts of any securities underwritten or purchased by each of them; and

the purchase price of the securities being offered and the proceeds to us and any discounts, commissions or concessions allowed or reallocated or paid to dealers.

The purchase price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time.

If underwriters are used in the sale of any securities, the securities will be acquired by the underwriters for their own account and may be resold 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. The securities may be either offered to the public through underwriting syndicates represented by managing underwriters, or directly by underwriters. Generally, the underwriters' obligations to purchase the securities will be subject to certain conditions precedent. The underwriters will be obligated to purchase all of the securities if they purchase any of the securities.

We may sell the securities through agents from time to time. The prospectus supplement will name any agent involved in the offer or sale of the securities and any commissions we pay to them. Generally, any agent will be acting on a best efforts basis for the period of its appointment.

We may authorize underwriters, dealers or agents to solicit offers by certain purchasers to purchase the securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. The contracts will be subject only to those conditions set forth in the prospectus supplement, and the prospectus supplement will set forth any commissions we pay for solicitation of these contracts.

Agents and underwriters may be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act of 1933, as amended, or to contribution with respect to payments which the agents or underwriters may be required to make in respect thereof. Agents and underwriters may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of securities, and may use

securities received from us in

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settlement of those derivatives to close out any related open borrowings of securities. The third party in such sale transactions will be an underwriter and will be identified in the applicable prospectus supplement (or a post-effective amendment). We may also use underwriters or such other third parties with whom we have a material relationship. We will describe the nature of any such relationship in the applicable prospectus supplement.

In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc., or FINRA, the maximum compensation to be received by a FINRA member or independent broker-dealer may not exceed 8% of the offering proceeds. It is anticipated that the maximum compensation to be received in any particular offering of securities will be less than this amount.

LEGAL MATTERS

The legality and validity of the securities offered from time to time under this prospectus will be passed upon by Alston & Bird LLP, New York, New York.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2012, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

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Shares

Common Stock

PROSPECTUS SUPPLEMENT

Joint Book-Running Managers

**Jefferies
Cowen and Company**

Co-Lead Manager

Aegis Capital Corp

, 2015
