

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM S-1

**REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

Metabolix, Inc.

(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

8731

(Primary Standard Industrial Classification Code Number)

04-3158289

(I.R.S. Employer Identification Number)

**21 Erie Street
Cambridge, MA 02139
(212) 583-1700**

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

**Joseph Shaulson
President and Chief Executive Officer
21 Erie Street
Cambridge, MA 02139
(212) 583-1700**

(Names, address, including zip code, and telephone number, including area code, of agents for service)

Please send copies of all communications to:

**John M. Mutkoski, Esq.
Thomas S. Levato, Esq.
Goodwin Procter LLP
53 State Street
Boston, MA 02109
(617) 570-1000**

Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer
Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common stock, \$0.01 par value per share	5,393,545(1) \$	2.85(2) \$	15,371,604 \$	1,547.92

(1) Represents 300,000 shares of common stock currently outstanding and 5,093,545 shares of common stock that are issuable pursuant to a common stock purchase agreement with the selling stockholder named herein. Pursuant to Rule 416(a) of the Securities Act of 1933, as amended, this Registration Statement also covers any additional shares of common stock which may become issuable to prevent dilution from stock splits, stock dividends and similar events.

(2) Pursuant to Rule 457(c) of the Securities Act of 1933, as amended, calculated on the basis of the average and low prices per share of the registrant's common stock reported on the NASDAQ Capital Market on October 16, 2015.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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The information in this prospectus is not complete and may be changed. The selling stockholder may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities, and the selling stockholder is not soliciting offers to buy these securities, in any jurisdiction where the offer or sale of these securities is not permitted.

SUBJECT TO COMPLETION, DATED OCTOBER 19, 2015



5,393,545 Shares

Common Stock

This prospectus relates to the sale of up to 5,393,545 shares of our common stock by Aspire Capital Fund, LLC. Aspire Capital is also referred to in this prospectus as the selling stockholder. The prices at which the selling stockholder may sell the shares will be determined by the prevailing market price for the shares or in negotiated transactions. We will not receive proceeds from the sale of the shares by the selling stockholder. However, we may receive proceeds of up to \$20.0 million from the sale of our common stock to the selling stockholder, pursuant to a common stock purchase agreement entered into with the selling stockholder on October 7, 2015, once the registration statement, of which this prospectus is a part, is declared effective.

The selling stockholder is an “underwriter” within the meaning of the Securities Act of 1933, as amended. We will pay the expenses of registering the shares offered hereby, but all selling and other expenses incurred by the selling stockholder will be paid by the selling stockholder.

Our common stock is listed on the NASDAQ Capital Market under the ticker symbol “MBLX.” On October 16, 2015, the last reported sale price per share of our common stock was \$2.75 per share.

You should read this prospectus and any prospectus supplement, together with additional information described under the headings “Incorporation of Certain Documents by Reference” and “Where You Can Find More Information,” carefully before you invest in any of our securities.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 8 of this prospectus.

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. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2015.

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Neither we nor the selling stockholder has authorized anyone to provide any information or to make any representations other than as contained in this prospectus or in any free writing prospectuses we have prepared. We and the selling stockholder take no responsibility for, and provide no assurance as to the reliability of, any information that others may give you. This prospectus is an offer to sell only the shares offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus is current only as of its date.

For investors outside of the United States: Neither we nor the selling stockholder have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. You are required to inform yourselves about, and to observe any restrictions relating to, this offering and the distribution of this prospectus outside of the United States.

All trademarks or trade names referred to in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus may be referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

We obtained the industry and market data included or incorporated by reference in this prospectus from our own internal estimates and research as well as from publicly available industry and general publications and research, surveys, studies and trials conducted by third parties. We believe and act as if the third-party data contained herein, and the underlying economic assumptions relied upon therein, are generally reliable. Some data is also based on our good faith estimates, which are derived from management's knowledge of the industry and independent sources. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. Similarly, we believe our internal research is reliable, even though such research has not been verified by any independent sources. In addition, while we believe the market opportunity information included or incorporated by reference in this prospectus is generally reliable and is based on reasonable assumptions, such data involves risks and uncertainties and are subject to change based on various factors, including those discussed under "Risk Factors." These and other factors could cause our results to differ materially from those expressed in the estimates made by third parties and by us.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus (including any accompanying prospectus supplement and documents incorporated by reference herein and therein) contains statements with respect to us which constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and are intended to be covered by the "safe harbor" created by those sections. Forward-looking statements, which are based on certain assumptions and reflect our plans, estimates and beliefs, can generally be identified by the use of forward-looking terms such as "believes," "expects," "may," "will," "should," "could," "seek," "intends," "plans," "estimates," "anticipates" or other comparable terms. These forward looking statements include, but are not limited to, statements concerning potential future collaborations and the planned spin out of our crops program, expectations regarding future manufacturing capacity, and objectives for research and development, product development, and commercialization of current and future products, including the commercialization of our biopolymer products. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed in "Risk Factors" in any prospectus supplement and in the documents incorporated by reference herein or therein.

We caution readers not to place undue reliance upon any such forward-looking statements, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the Securities and Exchange Commission, to publicly update or revise any such statements to reflect any change in company expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.

You should read this prospectus and any accompanying prospectus supplement and the documents that we incorporate by reference herein and therein and have filed as exhibits to the registration statement, of which this prospectus is part, completely and with the understanding that our actual future results may be materially different from what we expect. You should assume that the information appearing in this prospectus and any accompanying prospectus supplement is accurate as of the date on the cover of this prospectus or such prospectus supplement only. Our business, financial condition, results of operations and prospects may change. We may not update these forward-looking statements, even though our situation may change in the future, unless we have obligations under the federal securities laws to update and disclose material developments related to previously disclosed information. We qualify all of the information presented in this prospectus and any accompanying prospectus supplement, and particularly our forward-looking statements, by these cautionary statements.

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PROSPECTUS SUMMARY

Unless the context otherwise requires, references in this prospectus supplement to "we," "us" and "our" refer to Metabolix, Inc. and its subsidiaries.

This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider the more detailed information in the prospectus and the documents incorporated by reference herein, including "Risk Factors" and the financial statements and related notes.

Overview

Metabolix is an advanced biomaterials company focused on delivering sustainable solutions to the plastics industry. We have core capabilities in microbial genetics, fermentation process engineering, chemical engineering, polymer science, plant genetics and botanical science, and we have assembled these capabilities in a way that has allowed us to integrate our biotechnology research with real world chemical engineering and industrial practice. In

addition, we have created an extensive intellectual property portfolio to protect our innovations which, together with our technology, serves as a valuable foundation for our business.

Metabolix was formed to leverage the ability of natural systems to produce complex biopolymers from renewable resources. We have focused on a family of biopolymers found in nature called polyhydroxyalkanoates (“PHAs”), which occur naturally in living organisms and are chemically similar to polyesters. We have demonstrated the production of our PHAs from pilot to industrial scale and we have sold our PHA products commercially since 2012.

Our targeted markets offer substantial opportunity for innovation and value creation. Our strategy is based on the performance and differentiation of our materials. We aim to address unmet needs of our customers and leverage the distinctive properties of our proprietary PHA biopolymers to improve critical product qualities of material systems and enable our customers to enhance the value of their products and/or achieve cost savings through their value chains. As such, we are positioning our biopolymers as advanced specialty materials that offer a broad and attractive range of product and processing properties compared to other bioplastics or performance additives. We believe that a substantial global market opportunity exists to develop and commercialize our advanced biopolymer product technology.

In 2014, we conducted a comprehensive strategic review of our business and decided to focus the Company’s resources on commercializing PHA performance biopolymers. This has resulted in specifically targeting our research, development and commercial resources on the use of our Mirel® PHA biopolymers as performance additives in a range of applications where they can improve performance and/or reduce cost in other material systems such as polyvinyl chloride (“PVC”) and polylactic acid (“PLA”). In PVC additives, we are focusing on opportunities where our PHA biopolymers are used as property modifiers or process aids. We are also targeting applications where the performance, biodegradability, biobased content and other attributes of our PHA biopolymers provide unique functional advantages, such as biodegradation, required by such applications, including PHA resins for molded articles and films, PHA micropowders and PHA latex and other PHA barrier coatings for paper and cardboard.

In connection with this more focused business strategy, we decided in 2014 to discontinue our operations in Germany and to suspend work in a program that was developing processes for producing biobased chemicals from PHAs, and we are planning to spin out our crop science program—a research program focused on crop yield improvement and the production of PHAs in crops using agricultural biotechnology.

As part of this strategic shift, in October 2014 we sold substantially all of the assets of our wholly-owned German subsidiary, Metabolix GmbH, to AKRO-PLASTIC GmbH (“Akro”), a German manufacturer of engineering plastics compounds. Akro acquired our Mvera™, B5010 and B5011 products for compostable film, as well as certain inventory, certain contracts, and the Mvera™ trademark. Akro also took over the Metabolix GmbH

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employees and office space. The purpose of this sale was to simplify our business structure and focus resources on the success of our core PHA performance biopolymers business.

In late 2014, we decided to implement a plan to significantly increase the nameplate capacity at our contracted pilot manufacturing facilities to 50,000 pounds per month of our Mirel® PHA biopolymers. In connection with this plan, we have entered into multi-year agreements with the operator of our pilot recovery facility and with a toll contractor for fermentation services. The initial focus of this manufacturing plan is production of the Company’s a-PHA (amorphous, low Tg rubber) biopolymer for use in ongoing development and commercialization activities based on this unique PHA product. This new PHA material, together with existing inventory, is intended to support both market development and initial customer conversions as we continue working to build our PHA performance biopolymers business. We also intend to continue evaluating and developing production expansion options as we bring on commercial scale customers for our PHA biopolymers. The capital expansion at our pilot recovery facility is now complete and we are in the process of scaling-up pilot production of a-PHA biopolymer for customer projects.

We are focused on building our customer base to support the development of our business. To that end, we have intensified our efforts in product and application development and are continuing to enhance our capabilities in this area. We are also working closely with customers across a range of applications to understand the processing and performance profiles for their products, and are pursuing commercial opportunities with customers at different levels of maturity from initial data demonstration and product and process validation, through to larger scale trials, product testing and product launch.

This approach is integral to our specialty materials strategy, where the market opportunities are driven by the important value-adding role our biopolymers can play as components of other material systems or by bringing unique functional advantages such as biodegradability to customer applications. This is a critical area of focus for us and our success depends on working effectively with customers to identify uses and applications for our PHA biopolymers that substantiate the commercial potential for our products.

Our crop science program has been a technically challenging long-term effort, initially directed toward the production of PHA in plant crops. Based on our observations in this research, we began developing new genetic and informatics tools and capturing intellectual property around enhancing the photosynthetic capacity of plants. We are seeking to spin out our crop science program, recently launched under the name “Yield10 Bioscience,” into a separately funded venture focused entirely on the further development and commercialization of this technology.

Yield10 Bioscience is developing proprietary, breakthrough technologies to improve yield in major crops based on our “T3” transcriptome targeted metabolic engineering platform. We are focused on technologies that allow us to increase the efficiency of CO2 fixation through photosynthesis and its conversion into plant matter. We have shown early, encouraging yield improvements in camelina seed and switchgrass biomass production, and we are working to advance the technology in agriculturally significant crops to provide innovative new solutions to enhance global food security.

Yield10 is leveraging the microbial diversity found in nature to increase carbon fixation and eliminate bottlenecks in plant carbon metabolism, and has developed an engineering systems approach under the T3 platform targeted at step change improvements in crop yield. With this approach, Yield10 is working to deploy a series of proprietary gene systems to increase carbon capture and fixation in C3 plants. Early greenhouse and field trial data show a significant increase in seed yield in camelina, an industrial oil seed crop. Additional field trials are planned to confirm the initial results in camelina, and these gene systems are now being inserted into soybean, canola and rice for evaluation.

Yield10 is also targeting yield improvement in crops utilizing the C4 photosynthetic system such as switchgrass, sugarcane, corn and sorghum. Yield10 has leveraged the transcriptome targeting module of its T3 platform to identify three novel global transcription factor (GTF) genes in the bioenergy crop switchgrass that result in increased photosynthesis, increased central metabolism and an overall increase in biomass yield. We have identified

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We expect that Yield10 will need to form collaborations with established agricultural industry players in connection with the development and commercialization of these crop science innovations.

Corporate and Investor Information

Our company was incorporated in Massachusetts in June 1992 under the name Metabolix, Inc. In September 1998, we reincorporated in Delaware. Financial and other information about our company is available on our website (<http://www.metabolix.com>). The information on our website is not incorporated by reference into this prospectus and should not be considered to be part of this prospectus.

Selected Financial Data

The following table includes selected financial data for the periods indicated. Shares outstanding and per share data have been adjusted retroactively to give effect to our 1-for-6 reverse stock split which became effective on May 26, 2015.

	Six Months Ended June 30,		Years Ended December 31,				
	2015	2014	2014	2013	2012	2011	2010
	(in thousands, except per share data)						
Total assets	\$ 26,925	\$ 11,375	\$ 23,135	\$ 26,738	\$ 53,510	\$ 82,912	\$ 66,771
Total stockholders' equity	22,961	6,864	18,796	20,398	47,340	39,463	23,676
Revenues	1,389	1,312	2,800	3,778	41,381	1,425	448
Net income (loss) from continuing operations	(11,916)	(14,253)	(26,768)	(28,544)	3,956	(38,785)	(38,803)
Loss from discontinued operations	—	(1,136)	(2,766)	(1,962)	(326)	—	—
Net income (loss)	(11,916)	(15,389)	(29,534)	(30,506)	3,630	(38,785)	(38,803)
Net income (loss) per share from continuing operations, basic and diluted	(0.52)	(2.45)	(2.61)	(4.97)	0.69	(7.45)	(8.70)
Net loss per share from discontinued operations, basic and diluted	—	(0.20)	(0.27)	(0.34)	(0.05)	—	—
Net income (loss) per share	(0.52)	(2.65)	(2.88)	(5.31)	0.64	(7.45)	(8.70)
Number of shares used in per share calculations, basic	22,838,511	5,816,379	10,242,477	5,745,183	5,702,850	5,209,530	4,462,257
Number of shares used in per share calculations, diluted	22,838,511	5,816,379	10,242,477	5,745,183	5,713,263	5,209,530	4,462,257

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THE OFFERING

Common stock being offered by the selling stockholder 5,393,545 shares

Common stock outstanding immediately following this offering 32,374,759 shares(1)

Use of proceeds The selling stockholder will receive all of the proceeds from the sale of the shares offered for sale by it under this prospectus. We will not receive proceeds from the sale of the shares by the selling stockholder. However, we may receive up to \$20.0 million in proceeds from the sale of our common stock to the selling stockholder under the common stock purchase agreement described below. Any proceeds from the selling stockholder that we receive under the purchase agreement are expected to be used for general corporate purposes and working capital requirements.

NASDAQ Capital Market symbol MBLX

Risk factors Investing in our securities involves a high degree of risk. You should carefully review and consider the "Risk Factors" section of this prospectus for a discussion of factors to consider before deciding to invest in shares of our common stock.

On October 7, 2015, we entered into a common stock purchase agreement (referred to in this prospectus as the "Purchase Agreement"), with Aspire Capital Fund, LLC, an Illinois limited liability company (referred to in this prospectus as "Aspire Capital" or the "selling stockholder"), which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$20.0 million of our shares of common stock over the approximately 30-month term of the Purchase Agreement. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement, we issued to Aspire Capital 300,000 shares of our common stock as a commitment fee (referred to in this prospectus as the "Commitment Shares"). Concurrently with entering into the Purchase Agreement, we also entered into a registration rights agreement with Aspire Capital (referred to in this prospectus as the "Registration Rights Agreement"), in which we agreed to file one or more registration

statements, including the registration statement of which this prospectus is a part, as permissible and necessary to register under the Securities Act of 1933, as amended, or the Securities Act, the sale of the shares of our common stock that have been and may be issued to Aspire Capital under the Purchase Agreement.

As of October 12, 2015, there were 27,281,214 shares of our common stock outstanding (9,338,466 shares held by non-affiliates) including the 300,000 Commitment Shares issued to Aspire Capital but excluding the 5,093,545 shares offered

(1) The total shares of common stock outstanding immediately following this offering is based on 27,281,214 shares outstanding as of October 12, 2015, which includes 300,000 Commitment Shares issued to Aspire Capital pursuant to the Purchase Agreement. It excludes:

- 3,933,000 shares issuable upon exercise of outstanding warrants;
- 904,056 shares issuable upon exercise of outstanding stock options;
- 1,290,023 shares issuable pursuant to outstanding restricted stock units; and
- 3,283,303 shares available for future grants under our equity incentive and employee compensation plans.

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that may be issuable to Aspire Capital pursuant to the Purchase Agreement. If all of such 5,093,545 shares of our common stock offered hereby were issued and outstanding and held by non-affiliates as of October 12, 2015, such shares would represent 15.7% of the total common stock outstanding or 35.3% of the non-affiliate shares of common stock outstanding as of October 12, 2015. The number of shares of our common stock ultimately offered for sale by Aspire Capital is dependent upon the number of shares purchased by Aspire Capital under the Purchase Agreement.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we are registering 5,393,545 shares of our common stock under the Securities Act, which includes the 300,000 Commitment Shares that have already been issued to Aspire Capital and 5,093,545 shares of common stock which we may issue to Aspire Capital after the registration statement of which this prospectus is a part is declared effective under the Securities Act. All 5,393,545 shares of common stock are being offered pursuant to this prospectus.

After the Securities and Exchange Commission has declared effective the registration statement of which this prospectus is a part, on any trading day on which the closing sale price of our common stock exceeds \$0.50, we have the right, in our sole discretion, to present Aspire Capital with a purchase notice (each, a "Purchase Notice"), directing Aspire Capital (as principal) to purchase up to 50,000 shares of our common stock per trading day, up to \$20.0 million of our common stock in the aggregate over the term of the Purchase Agreement, at a per share price (the "Purchase Price") calculated by reference to the prevailing market price of our common stock (as more specifically described below).

In addition, on any date on which we submit a Purchase Notice for 50,000 shares to Aspire Capital, we also have the right, in our sole discretion, to present Aspire Capital with a volume-weighted average price purchase notice (each, a "VWAP Purchase Notice") directing Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company's common stock traded on the NASDAQ Capital Market on the next trading day (the "VWAP Purchase Date"), subject to a maximum number of shares we may determine (the "VWAP Purchase Share Volume Maximum") and a minimum trading price (the "VWAP Minimum Price Threshold") (as more specifically described below). The purchase price per share pursuant to such VWAP Purchase Notice (the "VWAP Purchase Price") is calculated by reference to the prevailing market price of our common stock (as more specifically described below).

The Purchase Agreement provides that we and Aspire Capital shall not effect any sales under the Purchase Agreement on any purchase date where the closing sale price of our common stock is less than \$0.50 per share (the "Floor Price"). This Floor Price and the respective prices and share numbers in the preceding paragraphs shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Aspire Capital. Aspire Capital has no right to require any sales by us, but is obligated to make purchases from us as we direct in accordance with the Purchase Agreement. There are no limitations on use of proceeds, financial or business covenants, restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. Aspire Capital may not assign its rights or obligations under the Purchase Agreement. The Purchase Agreement may be terminated by us at any time, at our discretion, without any penalty or cost to us.

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RISK FACTORS

You should carefully consider the following information about risks, together with the other information contained in this prospectus, before making an investment in our common stock. If any of the circumstances or events described below actually arises or occurs, our business, results of operations, cash flows and financial condition could be harmed. In any such case, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Relating to our Financial Position

We will need to secure additional funding and may be unable to raise additional capital on favorable terms, if at all.

The company held unrestricted cash and cash equivalents of \$22.7 million at June 30, 2015. Our present capital resources are not sufficient to fund our planned operations for a twelve month period, and therefore, raise substantial doubt about our ability to continue as a going concern. As a result, our independent registered public accounting firm included an explanatory paragraph in its report on our financial statements as of and for the year ended

December 31, 2014 with respect to this uncertainty. We expect that reductions in cash usage in 2015 due to the discontinuation of our German operations, restructuring of our U.S. organization and other cost-containment measures taken in 2014 will be largely offset by increased costs associated with expanded biopolymer pilot production. We used approximately \$12 million of cash in operating activities during the first six months of 2015 and expect to use an additional approximately \$11 million of cash in operating activities during the second half of 2015, which includes funding of our crop science program for the full year.

We were successful during our fiscal quarters ending June 30, 2015 and September 30, 2014, in raising \$14.7 million and \$24.9 million, respectively, net of offering costs, through private placements of equity securities. We will, however, require additional funding during the next twelve months, in addition to the proceeds of sales of common stock to Aspire Capital, if any, as described in this prospectus, to continue our operations and support our capital needs. The timing, structure and vehicles for obtaining future financing are under consideration, but there can be no assurance that such financing efforts will be successful. The current economic environment and recent uncertainty and volatility in financial markets may make it difficult to obtain additional financing.

We continue to face significant challenges and uncertainties and, as a result, our available capital resources may be consumed more rapidly than currently expected due to (i) lower than expected sales of our biopolymer products as a result of slow market adoption; (ii) increases in capital costs and operating expenses related to the establishment and start-up of biopolymer manufacturing on our own or with third parties; (iii) changes we may make to the business that affect ongoing operating expenses; (iv) changes we may make to our business strategy; (v) changes in our research and development spending plans; and (vi) other items affecting our forecasted level of expenditures and use of cash resources.

If we issue equity or debt securities to raise additional funds, (i) we may incur fees associated with such issuance, (ii) our existing stockholders may experience dilution from the issuance of new equity securities, (iii) we may incur ongoing interest expense and be required to grant a security interest in our assets in connection with any debt issuance, and (iv) the new equity or debt securities may have rights, preferences and privileges senior to those of our existing stockholders. In addition, utilization of our net operating loss and research and development credit carryforwards may be subject to significant annual limitations under Section 382 of the Internal Revenue Code of 1986 due to ownership changes resulting from future equity financing transactions. If we raise additional funds through collaboration, licensing or other similar arrangements, it may be necessary to relinquish valuable rights to our potential products or proprietary technologies, or grant licenses on terms that are not favorable to us.

The extent to which we utilize the Purchase Agreement with Aspire Capital as a source of funding will depend on a number of factors, including the prevailing market price of our common stock, the volume of trading in our common stock and the extent to which we are able to secure funds from other sources. The number of shares that we may sell to Aspire Capital under the Purchase Agreement on any given day and during the term of the

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agreement is limited. See “The Aspire Capital Transaction” section of this prospectus for additional information. Additionally, we and Aspire Capital may not effect any sales of shares of our common stock under the Purchase Agreement during the continuance of an event of default or on any trading day that the closing sale price of our common stock is less than \$0.50 per share. Even if we are able to access the full \$20.0 million under the Purchase Agreement, we will still need additional capital to fully implement our business, operating and development plans.

We have a history of net losses and our future profitability is uncertain.

With the exception of 2012, when the Company recognized \$38.9 million of deferred revenue from the terminated joint venture with ADM, we have recorded losses since our inception, including our fiscal quarter ended June 30, 2015. At June 30, 2015, our accumulated deficit was approximately \$314 million. Our operating losses since inception and the insufficiency of our existing capital resources to fund our planned operations for a twelve month period raise substantial doubt about our ability to continue as a going concern. As a result, our independent registered public accounting firm included an explanatory paragraph in its report on our financial statements as of and for the year ended December 31, 2014 with respect to this uncertainty. Since 1992, we have been engaged primarily in research and development and early-stage commercial activities. Because we have a limited history of commercial operations and we operate in a rapidly evolving industry, we cannot be certain that we will generate sufficient revenue to operate our business and become profitable.

Our ability to generate revenues in the near-term is highly dependent on the successful commercialization of our biopolymer products, which is subject to many risks and uncertainties as described below. This is our first and only product family in the market. We expect that it will take time for our production to ramp up to an economical scale while the market for our products expands. As a result, we expect to have significant losses and negative cash flow for at least the next several years, as we incur additional costs and expenses for the continued development and expansion of our business, including the costs of establishing manufacturing capacity and ongoing expenses of research and product development. The amount we spend will impact our ability to become profitable and this will depend, in part, on the number of new products that we attempt to develop. We may not achieve any or all of these goals and, thus, we cannot provide assurances that we will ever be profitable or achieve significant revenues.

Even if we can successfully manufacture and sell our products, whether we will be able to generate a profit on any of these products is highly uncertain and depends on a number of factors including the cost of production, the price we are able to charge for these products, and the emergence of competing products.

Risks Relating to our Biopolymers Business

Our biopolymer products may not achieve market success.

We currently have limited customer commitments for commercial quantities of our biopolymer products. Some prospective customers are currently evaluating and testing our products prior to making larger-scale purchase decisions. The successful commercialization of our biopolymers is also dependent on our customers' ability to commercialize the end-products that they make with our biopolymers, which may never gain market acceptance.

Market acceptance of our products will depend on numerous factors, many of which are outside of our control, including among others:

- public acceptance of such products;
- our ability to produce products of consistent quality that offer functionality comparable or superior to existing or new polymer products;

- our ability to produce products fit for their intended purpose;
- our ability to obtain necessary regulatory approvals for our products;
- the speed at which potential customers qualify our biopolymers for use in their products;
- the pricing of our products compared to competitive products, including petroleum-based plastics;

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- the strategic reaction of companies that market competitive products;
- our reliance on third parties who support or control production or distribution channels; and
- general market conditions.

We cannot assure you that we will be able to successfully produce biopolymers in a timely or economical manner, or at all.

We do not currently have a facility for commercial scale production of biopolymers. We have expanded our pilot scale production facility for biopolymers while we continue to evaluate various larger scale manufacturing options. However, our biopolymer manufacturing technology is highly complex. Construction of a new manufacturing facility or modification of an existing facility to make it suitable for our manufacturing process is likely to be time-consuming and expensive. We cannot assure you that we will have the necessary funds to finance the construction or modification of a commercial manufacturing facility, or that we will be able to develop a manufacturing infrastructure in a timely or economical manner, or at all. We may depend on obtaining commercial partners, production partners or government funding to finance and/or construct commercial manufacturing facilities for biopolymer production.

Our future biopolymer production costs are uncertain and may ultimately be higher than we expect. Further, because of the lead-time required for construction of a manufacturing facility, we may have to make capital investments before we have proven the market demand for our products. If the commercial manufacturing capacity that we build or otherwise obtain is not appropriate to the level of market demand, manufacturing costs may not be economical. If we fail to develop adequate manufacturing capacity and expertise or fail to manufacture biopolymers economically at large scale or in commercial volumes, the commercialization of our biopolymers and our business, financial condition and results of operations will be materially adversely affected.

We may not be able to obtain raw materials in sufficient quantities or in a timely manner.

We expect that the production of our PHA biopolymer products will require large volumes of feedstock. We cannot predict the future availability of any particular feedstock or be sure that we will be able to purchase it in sufficient quantities, at acceptable prices, or in a timely manner. If these materials cannot be obtained in sufficient quantities or at acceptable prices, our ability to produce our products may be impaired, the cost of our formulations may increase, and our business will be adversely affected.

We may rely heavily on future collaborative partners.

We may enter into strategic partnerships to develop and commercialize our current and future products or research and development programs with other companies to accomplish one or more of the following:

- obtain capital, equipment and facilities,
- obtain funding for research and development programs, product development programs and commercialization activities,
- obtain expertise in relevant markets,
- obtain access to raw materials, and/or
- obtain sales and marketing services or support.

We may not be successful in establishing or maintaining suitable partnerships, and we may not be able to negotiate collaboration agreements having terms satisfactory to us or at all. Failure to make or maintain these arrangements or a delay or failure in a collaborative partner's performance under any such arrangements could have a material adverse effect on our business and financial condition.

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We face and will face substantial competition.

We face and will face substantial competition from a variety of companies in the biodegradable, renewable resource-based plastic segment, as well as from companies in the conventional, non-biodegradable petroleum-based industry segment. Some of their products are suitable for use in a range of products at a price which may be lower than our premium priced product offerings. Many of these companies have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, sales and marketing, manufacturing, distribution, technical and other resources than Metabolix. Our competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. In addition, current and potential competitors have established or may establish financial or strategic relationships among themselves or with existing or potential customers or

other third parties. Accordingly, new competitors or alliances among competitors could emerge and rapidly acquire significant market share. We cannot assure you that we will be able to compete successfully against current or new competitors.

Changes in government regulations may have an adverse effect on demand for our products.

One of the key markets for our biopolymer products is as biobased, compostable or biodegradable substitutes for non-biodegradable petroleum-based plastics. This market is driven in part by laws, regulations and policies designed to encourage or mandate the increased use of biobased and/or biodegradable alternatives to petroleum-based plastics. There are numerous companies and trade associations that aggressively oppose these policies. The phasing out or elimination of these or similar laws and regulations, or the adoption of laws and regulations that are so broadly written as to ban our products along with the targeted non-biodegradable or petroleum-based plastic materials, could adversely affect our business.

Our products are made using genetically-engineered systems and may be, or may be perceived as being, harmful to human health or the environment.

Our PHA biopolymers have been produced by genetically engineered microbes using sugar derived from genetically engineered corn as a feedstock. Our future products may be produced from genetically engineered feedstocks through fermentation using genetically engineered microbes. Some countries have adopted regulations prohibiting or limiting the production of genetically-engineered crops and the sale of products made using genetically engineered organisms or genetically engineered feedstocks. Such regulations could harm our business and impair our ability to produce biobased polymers in that manner. The subject of genetic engineering of crops and other species has received negative publicity and has aroused public debate. Government authorities could, for social or other purposes, prohibit or regulate the development and use of genetically-engineered organisms or products made from such organisms. Social concerns could adversely affect acceptance of our products.

Our success will be influenced by the price of petroleum relative to the price of biobased feedstocks.

Our success will be influenced by the cost of our products relative to petroleum-based polymers. The cost of petroleum-based polymers is in part based on the price of petroleum. To date, our PHA biopolymers have been primarily manufactured using corn sugar, an agricultural feedstock. If the price of plant sugar feedstocks were to increase and/or if the price of petroleum decreases, our biobased products may be less competitive or may not be competitive relative to petroleum-based polymers. A material decrease in the cost of conventional petroleum-based polymers may require a reduction in the prices of our products for them to remain attractive in the marketplace and/or reduce the size of our addressable market.

We are subject to significant foreign and domestic government regulations, and compliance or failure to comply with these regulations could harm our business.

The manufacture, use, sale and marketing of PHA biopolymers is subject to government regulations in the U.S. and other countries, including requirements for government approval of food contact applications, hazardous materials regulations, and environmental, health and safety laws. The failure to comply with governmental regulations or to obtain government approval for our products could have a material adverse effect on our results of operations and financial condition. Governmental regulation or negative publicity could delay, reduce or eliminate

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market demand for our products which could have a material adverse effect on our results of operations and financial condition.

We may not have adequate insurance and may have substantial exposure to payment of product liability claims.

The testing, manufacture, marketing, and sale of our products may involve product liability risks. Although we currently have insurance covering product liability claims up to \$5 million per occurrence and in the aggregate, we may not be able to maintain this insurance at an acceptable cost, if at all. In addition, this insurance may not provide adequate coverage against potential losses. If claims or losses exceed our liability insurance coverage, it could have a material adverse effect on our business and our financial condition.

Upon termination or expiration of our leases we may not be able to renew or find suitable alternate space on acceptable terms.

We do not own any real property. We currently lease office and research and development space in Cambridge, Massachusetts, additional office and laboratory space in Lowell, Massachusetts, and a small office with laboratory and greenhouse space in Canada. We and our landlords have certain termination rights under these leases. In particular, the landlord for our Cambridge headquarters has a one-time option to terminate that lease effective May 2017, with appropriate advance notice. Upon termination or expiration of our leases we may experience disruption to our business and/or increased costs if we are not able to renew or find suitable alternate space on acceptable terms.

Risks Relating to our Crop Science Program

We may not be successful in spinning out our crop science program.

In order to focus our efforts on our biopolymers business, we are planning to spin out our crop science program, which we call “Yield10 Bioscience,” into a separately funded venture focused on the development and commercialization of our crop science technologies. However, there can be no assurance that we will be successful in identifying third parties interested in funding or otherwise participating in Yield10 Bioscience on acceptable terms, if at all. If we are not successful in spinning out the crop science program, we may incur substantial costs to either continue or wind down the program.

Our crop science product development cycle is lengthy and uncertain and will depend heavily on future collaborative partners.

The technology and processes used in our crop science program and the application of our technology to enhance photosynthetic efficiency of crops are at an early stage of development. Research and development in the seed, agricultural biotechnology, and larger agriculture industries is expensive and prolonged and entails considerable uncertainty. Completion of our development work will require a significant investment of both time and money, if it can be completed at all. To successfully develop and commercialize our innovations, we expect that we will need to form collaborations with established agricultural industry companies. The industry is highly concentrated and dominated by a small number of large players, which could impact our efforts to form such collaborations. We may not be successful in establishing or maintaining suitable partnerships, and we may not be able to negotiate collaboration agreements

having terms satisfactory to us or at all. In addition, industry collaborators have significant resources and development capabilities and may develop products and technologies that compete with or negatively impact the development and commercialization of our technologies.

Our crop science program may not be successful in developing commercial products.

We and our potential future collaborators may spend many years and dedicate significant financial and other resources developing traits that will never be commercialized. Seeds containing the traits that we develop may never become commercialized for any of the following reasons:

- our traits may not be successfully validated in the target crops;

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- our traits may not have the desired effect sought by future collaborators for the relevant crops;
- development and validation of traits, particularly during field trials, may be adversely affected by environmental or other circumstances beyond our control;
- we or our future collaborators may be unable to obtain the requisite regulatory approvals for the seeds containing our traits;
- competitors may launch competing or more effective seed traits or seeds;
- a market may not exist for seeds containing our traits or such seeds may not be commercially successful;
- future collaborators may be unable to fully develop and commercialize products containing our seed traits or may decide, for whatever reason, not to commercialize such products; and
- we may be unable to patent our traits in the necessary jurisdictions.

Consumer and government resistance to genetically modified organisms may negatively affect the ability to commercialize crops containing our traits.

Food and feed made from genetically modified seeds are not accepted by many consumers and in certain countries production of certain genetically modified crops is effectively prohibited, including throughout the European Union, due to concerns over such products' effects on food safety and the environment. The high public profile of biotechnology in food and feed production and lack of consumer acceptance of products to which we have devoted substantial resources could have a negative impact on the commercial success of products that incorporate our traits and could materially and adversely affect our ability to obtain collaborations and to finance our crop science program. We may incur liability and/or legal expenses if there are claims that our genetically-engineered crops damage the environment or contaminate other farm crops.

Risks Relating to Intellectual Property

Patent protection for our products is important and uncertain.

Our commercial success may depend in part on our obtaining and maintaining patent protection for our technologies in the United States and other jurisdictions, as well as successfully enforcing and defending this intellectual property against third-party challenges. If we are not able to obtain or defend patent protection for our technologies, then we will not be able to exclude competitors from developing or marketing such technologies, and this could negatively impact our ability to generate sufficient revenues or profits from product sales to justify the cost of development of our technologies and to achieve or maintain profitability. Our issued patents have expiration dates ranging from 2015 through 2032.

Our patent position involves complex legal and factual questions. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. Patents may not be issued for any pending or future pending patent applications owned by or licensed to us, and claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Moreover, we may be unable to protect certain of our intellectual property in the United States or in foreign countries. Foreign jurisdictions may not afford the same protections as U.S. law, and we cannot ensure that foreign patent applications will have the same scope as the U.S. patents. There will be many countries in which we will choose not to file or maintain patents because of the costs involved. Competitors may also design around our patents or develop competing technologies.

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Additionally, any issued patents owned by or licensed to us now or in the future may be challenged, invalidated, or circumvented. We could incur substantial costs to bring suits or other proceedings in which we may assert or defend our patent rights or challenge the patent rights of third parties. An unfavorable outcome of any such litigation could have a material adverse effect on our business and results of operations.

Third parties may claim that we infringe their intellectual property, and we could suffer significant litigation or licensing expense as a result.

Various U.S. and foreign issued patents and pending patent applications owned by third parties exist in areas relevant to our products and processes. We could incur substantial costs to challenge third party patents. If third parties assert claims against us or our customers alleging infringement of their patents or other intellectual property rights, we could incur substantial costs and diversion of management resources in defending these claims, and the defense of these claims could have a material adverse effect on our business. In addition, if we are unsuccessful in defending against these claims, these third parties may be awarded substantial damages, as well as injunctive or other equitable relief against us, which could effectively block our ability to make, use, sell, distribute, or market our products and services in the United States or abroad. Alternatively, we may seek licenses to such third party intellectual

property. However, we may be unable to obtain these licenses on acceptable terms, if at all. Our failure to obtain the necessary licenses or other rights could prevent the sale, manufacture, or distribution of some of our products and, therefore, could have a material adverse effect on our business.

We rely in part on trade secrets to protect our technology, and our failure to obtain or maintain trade secret protection could limit our ability to compete.

We rely on trade secrets to protect some of our technology and proprietary information, especially where we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. Litigating a claim that a third party had illegally obtained and was using our trade secrets would be expensive and time consuming, and the outcome would be unpredictable. Moreover, if our competitors independently develop similar knowledge, methods and know-how, it will be difficult for us to enforce our rights and our business could be harmed.

Risks Relating to Owning our Common Stock

Raising additional funds may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies.

If we raise additional funds through equity offerings or offerings of equity-linked securities, including warrants or convertible debt securities, we expect that our existing stockholders will experience significant dilution, and the terms of such securities may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financing, if available, may subject us to restrictive covenants that could limit our flexibility in conducting future business activities, including covenants limiting or restricting our ability to incur additional debt, dispose of assets or make capital expenditures. The Company may also incur ongoing interest expense and be required to grant a security interest in Company assets in connection with any debt issuance. If we raise additional funds through strategic partnerships or licensing agreements with third parties, we may have to relinquish valuable rights to our technologies or grant licenses on terms that are not favorable to us. In addition, the interests of our existing stockholders in our crop science program and related technologies may be significantly diluted in connection with our efforts to spin out Yield10 Bioscience.

Trading volume in our stock is low and an active trading market for our common stock may not be available on a consistent basis to provide stockholders with adequate liquidity. Our stock price may be extremely volatile, and our stockholders could lose a significant part of their investment.

Trading volume in our stock is low and an active trading market for shares of our common stock may not be sustained on a consistent basis. The public trading price for our common stock will be affected by a number of factors, including:

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- reported progress in our Biopolymers business or with respect to our efforts to spin out Yield10 Bioscience or develop crop related technologies, relative to investor expectations;
- changes in earnings estimates, investors' perceptions, recommendations by securities analysts or our failure to achieve analysts' earnings estimates;
- quarterly variations in our or our competitors' results of operations;
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors;
- future issuances and/or sales of our common stock or preferred stock;
- announcements or the absence of announcements by us, or our competitors, regarding acquisitions, new products, significant contracts, commercial relationships or capital commitments;
- commencement of, or involvement in, litigation;
- any major change in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- announcements related to patents issued to us or our competitors and to litigation involving our intellectual property;
- a lack of, or limited, or negative industry or security analyst coverage;
- developments in our industry and general economic conditions;
- short-selling or similar activities by third parties; and
- other factors described elsewhere in these "Risk Factors."

As a result of these factors, our stockholders may not be able to resell their shares at, or above, their purchase price. In addition, the stock prices of many technology companies have experienced wide fluctuations that have often been unrelated to the operating performance of those companies. Any negative change in the public's perception of the prospects of industrial or agricultural biotechnology or "clean technology" companies could depress our stock price regardless of our results of operations. These factors may have a material adverse effect on the market price of our common stock.

Our financial results may vary significantly from period to period, which may reduce our stock price.

Our financial results may fluctuate as a result of a number of factors, including those listed in this "Risk Factors" section, many of which are outside of our control. These fluctuations may cause the market price of our common stock to fall. Comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance.

Provisions in our certificate of incorporation and by-laws and Delaware law might discourage, delay or prevent a change of control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions of our certificate of incorporation and by-laws and Delaware law may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which our stockholders might otherwise receive a premium for their shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management.

In addition, Section 203 of the Delaware General Corporation Law prohibits a publicly-held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last three years has owned, 15% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of

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our Company, thereby reducing the likelihood that our stockholders could receive a premium for their common stock in an acquisition.

Concentration of ownership among our existing officers, directors and principal stockholders may prevent other stockholders from influencing significant corporate decisions and depress our stock price.

Based on the number of shares outstanding as of October 12, 2015, our officers, directors and stockholders who hold at least 5% of our stock beneficially own a combined total of approximately 69.7% of our outstanding common stock. If these officers, directors, and principal stockholders or a group of our principal stockholders act together, they will be able to exert a significant degree of influence over our management and affairs and control matters requiring stockholder approval, including the election of directors and approval of mergers, business combination or other significant transactions. The interests of one or more of these stockholders may not always coincide with our interests or the interests of other stockholders. For instance, officers, directors, and principal stockholders, acting together, could cause us to enter into transactions or agreements that we would not otherwise consider. Similarly, this concentration of ownership may have the effect of delaying or preventing a change in control of our company otherwise favored by our other stockholders. As of October 12, 2015, Jack W. Schuler and William P. Scully beneficially owned approximately 49.4% and approximately 11.6% of our common stock, respectively.

Risks Relating to the Offering

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

We are registering for sale the Commitment Shares that we have issued and 5,093,545 additional shares of common stock that we may sell to Aspire Capital under the Purchase Agreement. It is anticipated that shares registered in this offering will be sold over a period of up to approximately 30 months from the date of this prospectus. The number of shares ultimately offered for sale by Aspire Capital under this prospectus is dependent upon the number of shares we elect to sell to Aspire Capital under the Purchase Agreement. Depending on a variety of factors, including market liquidity in our common stock, the sale of shares under the Purchase Agreement may cause the trading price of our common stock to decline.

Aspire Capital may ultimately purchase all, some or none of the \$20.0 million of common stock that, together with the Commitment Shares, is the subject of this prospectus. Aspire Capital may sell all, some or none of our shares that it holds or comes to hold under the Purchase Agreement. Sales by Aspire Capital of shares acquired pursuant to the Purchase Agreement under the registration statement, of which this prospectus is a part, may result in dilution to the interests of other holders of our common stock. The sale of a substantial number of shares of our common stock by Aspire Capital in this offering, or anticipation of such sales, could cause the trading price of our common stock to decline or make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise desire. However, we have the right under the Purchase Agreement to control the timing and amount of sales of our shares to Aspire Capital, and the Purchase Agreement may be terminated by us at any time at our discretion without any penalty or cost to us.

We do not currently pay dividends and do not anticipate doing so in the foreseeable future.

We have never declared or paid, and it is our present intention for the foreseeable future not to declare or pay, dividends on our common stock. We intend to use future earnings, if any, in the operation and expansion of our business. Any future determination relating to our dividend policy will be made at the discretion of our board of directors, based on our financial condition, results of operations, contractual restrictions, capital requirements, business properties, restrictions imposed by applicable law and other factors our board of directors may deem relevant.

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USE OF PROCEEDS

This prospectus relates to shares of our common stock that may be offered and sold from time to time by Aspire Capital. We will not receive any proceeds upon the sale of shares by Aspire Capital. However, we may receive proceeds up to \$20.0 million under the Purchase Agreement with Aspire Capital.

The proceeds received from the sale of the shares under the Purchase Agreement will be used for general corporate purposes and working capital requirements. However, we cannot guarantee that we will receive any proceeds in connection with the Purchase Agreement because we may be unable or

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THE ASPIRE CAPITAL TRANSACTION

General

On October 7, 2015, we entered into the Purchase Agreement which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$20.0 million of our shares of common stock over the 30-month term of the Purchase Agreement. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement, we issued to Aspire Capital the Commitment Shares. Concurrently with entering into the Purchase Agreement, we also entered into the Registration Rights Agreement, in which we agreed to file one or more registration statements as permissible and necessary to register under the Securities Act, the sale of the shares of our common stock that have been and may be issued to Aspire Capital under the Purchase Agreement.

As of October 12, 2015, there were 27,281,214 shares of our common stock outstanding (9,338,466 shares held by non-affiliates) including the 300,000 Commitment Shares and excluding the 5,093,545 shares offered that may be issuable to Aspire Capital pursuant to the Purchase Agreement. If all of such 5,093,545 shares of our common stock offered hereby were issued and outstanding as of October 12, 2015 and held by non-affiliates, such shares would represent 15.7% of the total common stock outstanding or 35.3% of the non-affiliate shares of common stock outstanding as of October 12, 2015. The number of shares of our common stock ultimately offered for sale by Aspire Capital is dependent upon the number of shares purchased by Aspire Capital under the Purchase Agreement.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we are registering 5,393,545 shares of our common stock under the Securities Act, which includes the 300,000 Commitment Shares that have already been issued to Aspire Capital and 5,093,545 shares of common stock which we may issue to Aspire Capital after the registration statement of which this prospectus is a part is declared effective under the Securities Act. All 5,393,545 shares of common stock are being offered pursuant to this prospectus. Under the Purchase Agreement, we have the right but not the obligation to issue more than the 5,393,545 shares of common stock included in this prospectus to Aspire Capital if certain conditions are met. As of the date hereof, we do not plan to issue to Aspire Capital more than the 5,393,545 shares of common stock offered hereby. However if the conditions in the Purchase Agreement are met, we may elect to issue additional shares of common stock to Aspire Capital in excess of the 5,393,545 shares included in this prospectus, and we may be required to file one or more additional registration statements with respect to the sale by Aspire Capital of such additional shares of common stock.

After the Securities and Exchange Commission has declared effective the registration statement of which this prospectus is a part, on any trading day on which the closing sale price of our common stock is not less than \$0.50 per share, we have the right, in our sole discretion, to present Aspire Capital with a Purchase Notice, directing Aspire Capital (as principal) to purchase up to 50,000 shares of our common stock per business day, up to \$20.0 million of our common stock in the aggregate over the term of the Purchase Agreement, at a Purchase Price calculated by reference to the prevailing market price of our common stock over the preceding 12-business day period (as more specifically described below); however, no sale pursuant to a Purchase Notice may exceed \$250,000 per trading day.

In addition, on any date on which we submit a Purchase Notice to Aspire Capital for 50,000 Purchase Shares and the closing sale price of our common stock is not less than \$0.50 per share, we also have the right, in our sole discretion, to present Aspire Capital with a VWAP Purchase Notice directing Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company's common stock traded on the NASDAQ Capital Market on the next trading day, subject to the VWAP Purchase Share Volume Maximum and the VWAP Minimum Price Threshold. The VWAP Purchase Price is calculated by reference to the prevailing market price of our common stock (as more specifically described below).

The Purchase Agreement provides that the Company and Aspire Capital shall not effect any sales under the Purchase Agreement on any purchase date where the closing sale price of our common stock is less than the Floor Price. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Aspire Capital. Aspire Capital has no right to require

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any sales by us, but is obligated to make purchases from us as we direct in accordance with the Purchase Agreement. There are no limitations on use of proceeds, financial or business covenants, restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. Aspire Capital may not assign its rights or obligations under the Purchase Agreement. The Purchase Agreement may be terminated by us at any time, at our discretion, without any penalty or cost to us.

Purchase Of Shares Under The Common Stock Purchase Agreement

Under the common stock Purchase Agreement, on any trading day selected by us on which the closing sale price of our common stock exceeds \$0.50 per share, we may direct Aspire Capital to purchase up to 50,000 shares of our common stock per trading day. The Purchase Price of such shares is equal to the lesser of:

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

In addition, on any date on which we submit a Purchase Notice to Aspire Capital for purchase of 50,000 shares and on which the closing sale price of our common stock exceeds \$0.50 per share, we also have the right to direct Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the our common stock traded on the NASDAQ Capital Market on the next trading day, subject to the VWAP Purchase Share Volume Maximum and

the VWAP Minimum Price Threshold, which is equal to the greater of (a) 80% of the closing price of the Company's common stock on the business day immediately preceding the VWAP Purchase Date or (b) such higher price as set forth by the Company in the VWAP Purchase Notice. The VWAP Purchase Price of such shares is the lower of:

- the Closing Sale Price on the VWAP Purchase Date; or
- 97% of the volume-weighted average price for our common stock traded on the NASDAQ Capital Market:
 - on the VWAP Purchase Date, if the aggregate shares to be purchased on that date have not exceeded the VWAP Purchase Share Volume Maximum; or
 - during that portion of the VWAP Purchase Date until such time as the sooner to occur of (i) the time at which the aggregate shares traded on the NASDAQ Capital Market exceed the VWAP Purchase Share Volume Maximum or (ii) the time at which the sale price of the Company's common stock falls below the VWAP Minimum Price Threshold.

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

Minimum Share Price

Under the Purchase Agreement, we and Aspire Capital may not effect any sales of shares of our common stock under the Purchase Agreement on any trading day that the closing sale price of our common stock is less than \$0.50 per share.

Events of Default

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

- the effectiveness of any registration statement that is required to be maintained effective pursuant to the terms of the Registration Rights Agreement between us and Aspire Capital lapses for any reason

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(including, without limitation, the issuance of a stop order) or is unavailable to Aspire Capital for sale of our shares of common stock, and such lapse or unavailability continues for a period of 30 consecutive business days or for more than an aggregate of 60 business days in any 365-day period, which is not in connection with a post-effective amendment to any such registration statement; in connection with any post-effective amendment to such registration statement that is required to be declared effective by the SEC such lapse or unavailability may continue for a period of no more than 30 consecutive business days which may be extended for an additional 30 days if we receive a comment letter from the SEC in connection therewith;

- the suspension from trading or failure of our common stock to be listed on our principal market for a period of three consecutive business days;
- the delisting of our common stock from our principal market, provided our common stock is not immediately thereafter trading on the New York Stock Exchange, the NYSE MKT, the NASDAQ Global Select Market, the NASDAQ Global Market, the OTB Bulletin Board or the OTCQB marketplace or OTCQX marketplace of the OTC Markets Group;
- our transfer agent's failure to issue to Aspire Capital shares of our common stock which Aspire Capital is entitled to receive under the Purchase Agreement within five business days after an applicable purchase date;
- any breach by us of the representations or warranties (as of the dates made) or covenants contained in the Purchase Agreement or any related agreements which could have a material adverse effect on us, subject to a cure period of five business days;
- if we become insolvent or are generally unable to pay our debts as they become due; or
- any participation or threatened participation in insolvency or bankruptcy proceedings by or against us.

Our Termination Rights

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

No Short-Selling or Hedging by Aspire Capital

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

Effect of Performance of the Purchase Agreement on Our Stockholders

The Purchase Agreement does not limit the ability of Aspire Capital to sell any or all of the 5,393,545 shares registered in this offering. It is anticipated that shares registered in this offering will be sold over a period of up to approximately 30 months from the date of this prospectus. The sale by Aspire Capital of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and/or to be highly volatile. Aspire Capital may ultimately purchase all, some or none of the 5,093,545 shares of common stock not yet issued but registered in this offering. After it has acquired such shares, it may sell all, some or none of such shares. Therefore, sales to Aspire Capital by us pursuant to the Purchase Agreement also may result in substantial dilution to the interests of other holders of our common stock. However, we have the right to control the

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Percentage of Outstanding Shares After Giving Effect to the Purchased Shares Issued to Aspire Capital

In connection with entering into the Purchase Agreement, we authorized the sale to Aspire Capital of up to \$20.0 million of our shares of common stock. Subject to any required approval by our board of directors and the satisfaction of certain other conditions, we have the right but not the obligation to issue more than the 5,393,545 shares included in this prospectus to Aspire Capital under the Purchase Agreement. In the event we elect to issue more than 5,393,545 shares under the Purchase Agreement, we will be required to file one or more new registration statements and have them declared effective by the SEC. The number of shares ultimately offered for sale by Aspire Capital in this offering is dependent upon the number of shares purchased by Aspire Capital under the Purchase Agreement. The following table sets forth the number and percentage of outstanding shares to be held by Aspire Capital after giving effect to the sale of shares of common stock issued to Aspire Capital at varying purchase prices:

Assumed Average Purchase Price	Proceeds from the Sale of Shares to Aspire Capital Under the Purchase Agreement Registered in this Offering	Number of Shares to be Issued in this Offering at the Assumed Average Purchase Price (1)	Percentage of Outstanding Shares After Giving Effect to the Purchased Shares Issued to Aspire Capital (2)
\$ 0.50	\$ 2,546,773	5,093,545	16.7%
\$ 1.00	\$ 5,093,545	5,093,545	16.7%
\$ 1.50	\$ 7,640,318	5,093,545	16.7%
\$ 2.50	\$ 12,733,863	5,093,545	16.7%
\$ 3.93	\$ 20,000,000	5,093,545	16.7%
\$ 5.00	\$ 20,000,000	4,000,000	13.7%
\$ 7.50	\$ 20,000,000	2,666,667	9.9%
\$ 10.00	\$ 20,000,000	2,000,000	7.9%

- (1) Excludes 300,000 Commitment Shares issued under the Purchase Agreement between the Company and Aspire Capital.
- (2) The denominator is based on 27,281,214 shares outstanding as of October 12, 2015, which includes the 300,000 Commitment Shares previously issued to Aspire Capital and the number of shares set forth in the adjacent column which we would have sold to Aspire Capital. The numerator is based on the number of shares which we may issue to Aspire Capital under the Purchase Agreement (that are the subject of this offering) at the corresponding assumed purchase price set forth in the adjacent column.

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SELLING STOCKHOLDER

The selling stockholder may from time to time offer and sell any or all of the shares of our common stock set forth below pursuant to this prospectus. When we refer to the “selling stockholder” in this prospectus, we mean the entity listed in the table below, and its respective pledgees, donees, permitted transferees, assignees, successors and others who later come to hold any of the selling stockholder’s interests in shares of our common stock other than through a public sale.

The following table sets forth, as of the date of this prospectus, the name of the selling stockholder for whom we are registering shares for sale to the public, the number of shares of common stock beneficially owned by the selling stockholder prior to this offering, the total number of shares of common stock that the selling stockholder may offer pursuant to this prospectus and the number of shares of common stock that the selling stockholder will beneficially own after this offering. Except as noted below, the selling stockholder does not have, or within the past three years has not had, any material relationship with us or any of our predecessors or affiliates and the selling stockholder is not or was not affiliated with registered broker-dealers.

Based on the information provided to us by the selling stockholder, assuming that the selling stockholder sells all of the shares of our common stock beneficially owned by it that have been registered by us and does not acquire any additional shares during the offering, the selling stockholder will not own any shares other than those appearing in the column entitled “Beneficial Ownership After This Offering.” We cannot advise you as to whether the selling stockholder will in fact sell any or all of such shares of common stock. In addition, the selling stockholder may have sold, transferred or otherwise disposed of, or may sell, transfer or otherwise dispose of, at any time and from time to time, the shares of our common stock in transactions exempt from the registration requirements of the Securities Act after the date on which it provided the information set forth in the table below.

Selling Stockholder	Shares Beneficially Owned Before Offering	Percentage of Outstanding Shares Beneficially Owned Before Offering(1)	Shares to be Sold in the Offering	Shares Beneficially Owned After Offering(2)	Percentage of Outstanding Shares Beneficially Owned After Offering(1)
Aspire Capital Fund, LLC(3)	600,000	2.2%	5,393,545	300,000	0.9%

- (1) Based on 27,281,214 shares of common stock outstanding on October 12, 2015.
- (2) Assumes the sale of all shares of common stock registered pursuant to this prospectus, although the selling stockholder is under no obligation known to us to sell any shares of common stock at this time.

- (3) Aspire Capital Partners LLC (“Aspire Partners”) is the Managing Member of Aspire Capital Fund LLC (“Aspire Fund”). SGM Holdings Corp (“SGM”) is the Managing Member of Aspire Partners. Mr. Steven G. Martin (“Mr. Martin”) is the president and sole shareholder of SGM, as well as a principal of Aspire Partners. Mr. Erik J. Brown (“Mr. Brown”) is the president and sole shareholder of Red Cedar Capital Corp (“Red Cedar”), which is a principal of Aspire Partners. Mr. Christos Komissopoulos (“Mr. Komissopoulos”) is president and sole shareholder of Chrisko Investors Inc (“Chrisko”), which is a principal of Aspire Partners. Each of Aspire Partners, SGM, Red Cedar, Chrisko, Mr. Martin, Mr. Brown, and Mr. Komissopoulos may be deemed to be a beneficial owner of common stock held by Aspire Fund. Each of Aspire Partners, SGM, Red Cedar, Chrisko, Mr. Martin, Mr. Brown, and Mr. Komissopoulos disclaims beneficial ownership of the common stock held by Aspire Fund.

As of the date hereof, 300,000 shares of our common stock have been acquired by Aspire Capital under the Purchase Agreement, consisting of shares we issued to Aspire Capital as a commitment fee. We may elect in our sole discretion to sell to Aspire Capital additional shares under the Purchase Agreement, including up to 5,093,545 shares

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offered hereunder, but Aspire Capital does not presently beneficially own those shares as determined in accordance with the rules of the SEC.

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PLAN OF DISTRIBUTION

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

- ordinary brokers’ transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents;
- “at the market” into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

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

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

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

Aspire Capital is an “underwriter” within the meaning of the Securities Act.

Neither we nor Aspire Capital can presently estimate the amount of compensation that any agent will receive. We know of no existing arrangements between Aspire Capital, any other stockholder, broker, dealer, underwriter, or agent relating to the sale or distribution of the shares offered by this prospectus. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters, or dealers and any compensation from the selling stockholder, and any other required information.

We will pay all of the expenses incident to the registration, offering, and sale of the shares to the public other than commissions or discounts of underwriters, broker-dealers, or agents. We have agreed to indemnify Aspire Capital and certain other persons against certain liabilities in connection with the offering of shares of common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Aspire Capital has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to

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us by Aspire Capital specifically for use in this prospectus or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.

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

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

We may suspend the sale of shares by Aspire Capital pursuant to this prospectus for certain reasons, including if the prospectus is required to be supplemented or amended to include additional information that may be considered material.

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

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LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts.

EXPERTS

The financial statements incorporated in this prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2014, have been so incorporated in reliance on the report (which contains an explanatory paragraph relating to the company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements) of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus are part of the registration statement on Form S-1 we filed with the SEC under the Securities Act of 1933, as amended, and does not contain all the information set forth in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements or other documents, the reference may not be complete, and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference in this prospectus for a copy of such contract, agreement or other document.

Because we are subject to the information and reporting requirements of the Securities Exchange Act of 1934, as amended, we file annual, quarterly and special reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov> or on our website at <http://www.metabolix.com> under the "Investor Relations" link.

You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with them, which means that we can disclose important information in this prospectus by referring to those documents. The information incorporated by reference is considered to be part of this prospectus. We incorporate by reference the documents listed below. The documents we are incorporating by reference as of their respective dates of filing are:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2014;
- Our Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2015 and June 30, 2015;
- Portions of our Proxy Statement filed with the SEC on April 27, 2015 that have been incorporated by reference into our Annual Report on Form 10-K;
- Our Current Reports on Form 8-K as filed on January 5, 2015, January 9, 2015, March 19, 2015, May 13, 2015, May 26, 2015, June 1, 2015, June 17, 2015, August 12, 2015, September 17, 2015 and October 7, 2015; and
- The description of our common stock contained in Item 1 of our Registration Statement on Form 8-A filed with the SEC on November 6, 2006, including any amendments or reports filed for the purpose of updating the description.

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We will provide, without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request of such person, a copy of any or all of the documents incorporated herein by reference other than exhibits, unless such exhibits are specifically incorporated by reference into such documents or this document. Requests for such documents should be addressed in writing or by telephone to: Investor Relations Metabolix, Inc., 21 Erie Street Cambridge, MA 02139, (617) 583-1700.

You should rely only on the information contained in this prospectus, any prospectus supplement or any document to which we have referred you. We have not authorized anyone else to provide you with information that is different. This prospectus and any prospectus supplement may be used only where it is legal to sell these securities. The information in this prospectus or any prospectus supplement is current only as of the date on the front of these documents.

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5,393,545 Shares



Common Stock

PROSPECTUS

, 2015

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PART II

Information Not Required in Prospectus

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses payable by us in connection with the offering described in this registration statement, other than underwriting discounts and commissions. All of the amounts shown are estimated, except the SEC registration fee. The registrant will bear all of the expenses shown below.

SEC Registration Fee	\$	1,548
Printing Expenses		10,000
Accounting Fees and Expenses		25,000
Legal Fees and Expenses		60,000
Miscellaneous		3,952
Total	\$	100,500

Item 14. Indemnification of Directors and Officers.

The Delaware General Corporation Law and our certificate of incorporation and by-laws provide for indemnification of our directors and officers for liabilities and expenses that they may incur in such capacities. In general, directors and officers are indemnified with respect to actions taken in good faith in a manner reasonably believed to be in, or not opposed to, the best interests of the registrant and, with respect to any criminal action or proceeding, actions that the indemnitee had no reasonable cause to believe were unlawful.

Our certificate of incorporation provides that no director shall be personally liable to us or to our stockholders for monetary damages for breach of fiduciary duty as a director, except that the limitation shall not eliminate or limit liability to the extent that the elimination or limitation of such liability is not permitted by the Delaware General Corporation Law as the same exists or may hereafter be amended.

Our by-laws further provide for the indemnification of our directors and officers to the fullest extent permitted by Section 145 of the Delaware General Corporation Law, including circumstances in which indemnification is otherwise discretionary. A principal effect of these provisions is to limit or eliminate the potential liability of our directors for monetary damages arising from breaches of their duty of care, subject to certain exceptions. These provisions may also shield directors from liability under federal and state securities laws.

We have entered into indemnification agreements with each of our directors and certain of our executive officers. These agreements provide that we will indemnify each of our directors and certain of our executive officers to the fullest extent permitted by law.

We also maintain a general liability insurance policy which covers certain liabilities of directors and officers of our company arising out of claims based on acts or omissions in their capacities as directors or officers.

Item 15. Recent Sales of Unregistered Securities.

On May 26, 2015, the Company effected a 1-for-6 reverse stock split of its common stock. All common stock share amounts, share prices, exercise prices, and conversion rates set forth below have, where applicable, been adjusted retroactively to reflect this reverse stock split.

During the three years ended October 12, 2015, the Company issued an aggregate of 183,895 shares of common stock to participants in its Metabolix, Inc. 401(k) Plan as a matching contribution. The issuance of these securities was exempt from registration pursuant to Section 3(a)(2) of the Securities Act of 1933 as exempted securities.

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On December 19, 2013, the Company's Board of Directors granted the following awards to Joseph Shaulson in connection with his agreement to serve as a member of the Company's Board of Directors on that date and as an inducement for him to accept employment with the Company as its President and Chief Executive Officer starting in January 2014: (i) a nonqualified stock option to purchase 191,667 shares of the Company's common stock with an exercise price equal to \$7.98 per share; (ii) restricted stock units that represent a contingent right to receive up to 100,000 shares of the Company's common stock upon the achievement of certain stock price and revenue based targets as set forth in Mr. Shaulson's employment agreement; and (iii) the right to purchase 41,667 shares of the Company's common stock within 30 days after commencement of Mr. Shaulson's employment with the Company at a price equal to \$7.20 per share. On January 28, 2014, Mr. Shaulson exercised his right to purchase the 41,667 shares of common stock at an aggregate exercise price of \$300,000. We deem these sales and issuances of securities and these grants and exercises of stock options as exempt from registration pursuant to Section 4(a)(2) of the Securities Act of 1933, as amended.

On August 22, 2014, the Company completed a private placement financing in which the Company sold units of the Company's equity securities to certain qualified institutional and individual investors. Proceeds received from the transaction were approximately \$24,914,000, net of issuance costs of approximately \$86,000. Upon the closing of the transaction, the Company issued a total of 8,333,333 new shares of common stock and 50,000 shares of Series B Preferred Stock to the investors. The issuance of these securities was not registered under the Securities Act as such issuance was exempt from registration under Section 4(a)(2) of the Securities Act and Regulation D promulgated thereunder. Each share of preferred stock issued in the transaction converted into 166.67 shares of common stock, for a total of 8,333,333 additional shares of common stock on October 30, 2014, following stockholder approval of a charter amendment increasing the number of authorized shares of common stock to 250,000,000 and the effectiveness of such charter amendment.

On June 19, 2015, the Company completed a private placement of Company securities. Proceeds received from the transaction were approximately \$14,703,000, net of issuance costs of approximately \$297,000 and will be used to support the Company's operations and capital needs. Investors participating in the transaction, including Jack W. Schuler, Birchview Capital, Hong Kong Sino-Science Oil & Gas Co., Ltd, certain members of the Company's board of directors and executive management team and certain other investors, purchased a total of 4,370,000 shares of common stock at a price of \$3.32 per share and warrants with a purchase price of \$0.125 per warrant to purchase up to an aggregate of 3,933,000 additional shares of common stock. The warrants have a four-year term and are immediately exercisable at a price of \$3.98 per share. The issuance of these securities was not registered under the Securities Act as such issuance was exempt from registration under Section 4(a)(2) of the Securities Act.

Item 16. Exhibits and Financial Statement Schedules.

Exhibit Number	Description
3.1 (14)	Amended and Restated Certificate of Incorporation of the Registrant.
3.2 (15)	Certificate of Elimination of Series B Preferred Stock, dated September 11, 2015.
3.3 (1)	Amended and Restated By-laws of the Registrant.
4.1 (1)	Specimen Stock Certificate for shares of the Registrant's Common Stock.
4.2 (18)	Registration Rights Agreement between Aspire Capital Fund, LLC, dated October 7, 2015
5.1 *	Legal Opinion of Goodwin Procter LLP.
10.1 †(1)	2005 Stock Plan.
10.1.1 †(1)	2005 Stock Plan, Form of Incentive Stock Option Agreement.
10.1.2 †(1)	2005 Stock Plan, Form of Non-Qualified Stock Option Agreement.
10.2 †(1)	2006 Stock Option and Incentive Plan.
10.2.1 †(1)	2006 Stock Option and Incentive Plan, Form of Incentive Stock Option Agreement.
10.2.2 †(1)	2006 Stock Option and Incentive Plan, Form of Non-Qualified Stock Option Agreement.

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10.2.3 †(1)	2006 Stock Option and Incentive Plan, Form of Director Non-Qualified Stock Option Agreement.
10.3 †(12)	2014 Stock Option and Incentive Plan.
10.3.1 †(16)	2014 Stock Option and Incentive Plan, Form of Incentive Stock Option Award.
10.3.2 †(16)	2014 Stock Option and Incentive Plan, Form of Non-Qualified Stock Option Award.
10.3.3 †(16)	2014 Stock Option and Incentive Plan, Form of Restricted Stock Unit Award.
10.3.4 †(14)	2014 Stock Option and Incentive Plan (revised and restated solely to reflect the effect of the Registrant's reverse stock split on May 26, 2015).
10.4 #(1)	License Agreement between the Registrant and Massachusetts Institute of Technology dated July 15, 1993, as amended.
10.5 †(1)	Employment Agreement between the Registrant and Oliver P. Peoples dated July 20, 2006.
10.5.1 †(4)	First Amendment to Employment Agreement between the Registrant and Oliver P. Peoples executed December 19, 2008.
10.5.2 †(4)	Second Amendment to Employment Agreement between the Registrant and Oliver P. Peoples executed February 25, 2009.
10.6 †(16)	Severance Agreement between the Registrant and Charles B. Haaser dated January 5, 2015.
10.7 †(8)	Severance Agreement between the Registrant and Sarah P. Cecil executed July 1, 2013.
10.8 †(3)	Employment Agreement between the Registrant and Johan van Walsem executed July 9, 2009.
10.8.1 †(8)	Letter Agreement between the Registrant and Johan van Walsem executed on July 12, 2013.
10.9 †(5)	Employment Agreement between the Registrant and Lynne H. Brum executed November 14, 2011.
10.10 †(9)	Employment Agreement between the Registrant and Joseph Shaulson dated December 19, 2013.

10.11	†(9)	Noncompetition, Confidentiality and Inventions Agreement between the Registrant and Joseph Shaulson dated December 19, 2013.
10.12	†(10)	Non-Qualified Stock Option Agreement between the Registrant and Joseph Shaulson dated December 19, 2013.
10.13	†(10)	Restricted Stock Unit Award Agreement between the Registrant and Joseph Shaulson dated March 24, 2014.
10.14	†(1)	Form of Employee Noncompetition, Nondisclosure and Inventions Agreement between the Registrant and Oliver P. Peoples and Johan van Walsem.
10.15	†(1)	Form of Noncompetition, Nondisclosure and Inventions Agreement between the Registrant and Charles B. Haaser, Lynne Brum, and Sarah P. Cecil.
10.16	†(1)	Form of Indemnification Agreement between the Registrant and its Directors and Officers.
10.17	(1)	Lease Agreement between the Registrant and 21 Erie Realty Trust dated as of December 29, 2003 for the premises located at 21 Erie Street, Cambridge, Massachusetts 02139.
10.17.1	(9)	Second Amendment to Lease between the Company and 21 Erie Realty Trust dated as of October 25, 2013 for the premises located at 21 Erie Street, Cambridge, Massachusetts 02139.
10.18	(2)	Lease between Fortune Wakefield, LLC and Metabolix, Inc. dated March 30, 2007.
10.18.1	(6)	First Amendment of Lease between Fortune Wakefield, LLC and Metabolix, Inc. dated February 29, 2012.
10.18.2	(9)	Second Amendment of Lease between Fortune Wakefield, LLC and Metabolix, Inc. dated October 24, 2013.
10.19	#(1)	License Agreement between the Company and Tepha, Inc. dated as of October 1, 1999.
10.20	#(1)	License Agreement between the Company and Tepha, Inc. dated as of September 9, 2003.

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10.21	(17)	Securities Purchase Agreement dated June 15, 2015 among the Company and the investors named therein.
10.22	(18)	Common Stock Purchase Agreement between the Registrant and Aspire Capital Fund, LLC, dated October 7, 2015.
14.1	(5)	Metabolix, Inc. Code of Business Conduct and Ethics.
21.1	(7)	Subsidiaries of the Registrant.
23.1	*	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm.
23.2	*	Consent of Goodwin Procter LLP (included in the opinion filed as Exhibit 5.1)
24.1	*	Power of Attorney (incorporated by reference to the signature page of this Registration Statement).
101.1	(16)	The following financial information from the Metabolix Inc. Annual Report on Form 10-K for the year ended December 31, 2014 formatted in XBRL: (i) Consolidated Balance Sheets, December 31, 2014 and December 31, 2013; (ii) Consolidated Statements of Operations, Years Ended December 31, 2014, 2013 and 2012; (iii) Consolidated Statements of Comprehensive Income (Loss), Years Ended December 31, 2014, 2013 and 2012; (iv) Consolidated Statements of Cash Flows, Years Ended December 31, 2014, 2013 and 2012; and (v) Consolidated Statements of Stockholders' Equity for the Years Ended December 31, 2014, 2013 and 2012; and (vi) Notes to Consolidated Financial Statements.

† Indicates a management contract or any compensatory plan, contract or arrangement.

Confidential treatment has been granted for certain portions of this document pursuant to a Commission order. Such provisions have been filed separately with the Commission.

* Filed herewith.

- (1) Incorporated by reference herein to the exhibits to the Registrant's Registration Statement on Form S-1 (File No. 333-135760).
- (2) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2007 (File No. 001-33133).
- (3) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009 (File No. 001-33133).
- (4) Incorporated by reference herein to the exhibits to the Registrant's 2008 Annual Report on Form 10-K filed March 12, 2009 (File No. 001-33133).
- (5) Incorporated by reference herein to the exhibits to the Registrant's 2011 Annual Report on Form 10-K filed March 12, 2012 (File No. 001-33133).
- (6) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012 (File No. 001-33133).
- (7) Incorporated by reference herein to the exhibits to the Registrant's 2012 Annual Report on Form 10-K filed March 28, 2013 (File No. 001-33133).
- (8) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2013 (File No. 001-33133).
- (9) Incorporated by reference herein to the exhibits to the Registrant's 2013 Annual Report on Form 10-K filed March 28, 2014 (File No. 001-33133).
- (10) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 (File No. 001-33133).
- (11) Incorporated by reference herein to the exhibits to the Registrant's Current Report on Form 8-K filed on August 4, 2014 (File No. 001-33133).
- (12) Incorporated herein by reference herein to Appendix A to the Registrant's Definitive Proxy Statement on Schedule 14A filed on October 6, 2014 (File No. 001-33133).
- (13) Incorporated by reference herein to the exhibits to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014 (File No. 001-33133)
- (14) Incorporated herein by reference to the exhibits in the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015 (File No. 001-33133).
- (15) Incorporated by reference herein to the exhibits to the Registrant's Current Report on Form 8-K filed on September 17, 2015 (File No. 001-33133).

- (16) Incorporated by reference herein to the exhibits to the Registrant's 2014 Annual Report on Form 10-K filed March 25, 2015 (File No. 001-33133).
- (17) Incorporated by reference herein to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed June 17, 2015 (File No. 001-33133).
- (18) Incorporated by reference herein to Exhibit 1.1 to the Registrant's Current Report on Form 8-K filed October 7, 2015 (File No. 001-33133).

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Item 17. Undertakings.

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser: each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness; provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers, and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in in the City of Cambridge, Commonwealth of Massachusetts, on October 19, 2015.

METABOLIX, INC.

By: /s/ Joseph Shaulson
Joseph Shaulson
President and Chief Executive Officer

POWER OF ATTORNEY AND SIGNATURES

KNOW ALL BY THESE PRESENT, that each individual whose signature appears below hereby constitutes and appoints each of Joseph Shaulson and Sarah P. Cecil as such person's true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for such person in such person's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement (or any Registration Statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933), and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission granting unto each said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all

intents and purposes as such person might or could do in person, hereby ratifying and confirming all that any said attorney-in-fact and agent, or any substitute or substitutes of any of them, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement and Power of Attorney has been signed by the following person in the capacities and on the date indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Joseph Shaulson</u> Joseph Shaulson	President and Chief Executive Officer <i>(Principal Executive Officer)</i>	October 19, 2015
<u>/s/ Charles B. Haaser</u> Charles B. Haaser	Chief Accounting Officer <i>(Principal Financial and Accounting Officer)</i>	October 19, 2015
<u>/s/ Peter N. Kellogg</u> Peter N. Kellogg	Director	October 19, 2015
<u>/s/ Celeste Beeks Mastin</u> Celeste Beeks Mastin	Director	October 19, 2015
<u>/s/ Oliver P. Peoples</u> Oliver P. Peoples, Ph.D.	Director	October 14, 2015
<u>/s/ Joseph Shaulson</u> Joseph Shaulson	Director	October 19, 2015

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<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Anthony J. Sinskey</u> Anthony J. Sinskey, Sc.D.	Director	October 19, 2015
<u>/s/ Matthew Strobeck</u> Matthew Strobeck, Ph.D.	Director	October 19, 2015
<u>/s/ Robert L. Van Nostrand</u> Robert L. Van Nostrand	Director	October 19, 2015

[Goodwin Procter LLP Letterhead]

October 19, 2015

Metabolix, Inc.
21 Erie St.
Cambridge, MA 02139

Re: Securities Registered under Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to Metabolix, Inc., a Delaware corporation (the "Company"), in connection with its filing of a Registration Statement on Form S-1 (as amended or supplemented, the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration of the offering by the selling stockholder listed in the Registration Statement under "Selling Stockholder" (the "Selling Stockholder") of up to 5,393,545 shares (the "Shares") of the Company's Common Stock, \$0.01 par value per share (the "Common Stock"), which include 300,000 shares of Common Stock (the "Commitment Shares") issued to the Selling Stockholder as a commitment fee and up to 5,093,545 shares of Common Stock (the "Future Shares") that may be issued to the Selling Stockholder pursuant to the Purchase Agreement (as defined below). The Shares are being sold to the Selling Stockholder pursuant to a Common Stock Purchase Agreement between the Company and the Selling Stockholder (the "Purchase Agreement").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

For purposes of the opinion set forth below, we have assumed that, in the future, the Company does not issue shares of Common Stock or reduce the total number of shares of Common Stock that the Company is authorized to issue under its certificate of incorporation such that the number of unissued shares of Common Stock authorized under the Company's certificate of incorporation is less than the number of unissued Shares.

For purposes of the opinions set forth below, we refer to the following as "Future Approval and Issuance": (a) the approval by the Company's board of directors (or a duly authorized committee of the board of directors) of the issuance of the Shares (the "Approval") and (b) the issuance of the Shares in accordance with the Approval and the receipt by the Company of the consideration (which shall not be less than the par value of such Shares) to be paid in accordance with the Approval.

The opinion set forth below is limited to the Delaware General Corporation Law (which includes reported judicial decisions interpreting the Delaware General Corporation Law).

Based on the foregoing, we are of the opinion that (i) the Future Shares have been duly authorized and, upon Future Approval and Issuance, will be validly issued, fully paid and non-assessable, and (ii) the Commitment Shares have been duly authorized and validly issued and are fully paid and non-assessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP
GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-1 of our report dated March 25, 2015 relating to the financial statements, which appears in Metabolix, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2014. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ PricewaterhouseCoopers LLP
Boston, MA
October 19, 2015
