



5,393,545 Shares

Common Stock

This prospectus relates to the resale, from time to time, of up to 5,393,545 shares of our common stock by Aspire Capital Fund, LLC. Aspire Capital Fund, LLC is also referred to in this prospectus as the “selling stockholder” or “Aspire Capital”. 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.

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 June 7, 2016, the last reported sale price per share of our common stock was \$0.72 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 June 8, 2016.

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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.

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 the Company's business plans and strategies; strategic alternatives being considered for our specialty biopolymers business and Yield10 crop science program; expected future financial results and cash requirements; plans for obtaining additional funding; plans and expectations that depend on the Company's ability to continue as a going concern; and plans for development and commercialization of our Yield10 crop science program. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include, without limitation, risks related to our limited cash resources, uncertainty about our ability to secure additional funding, risks and uncertainties associated with the Company's exploration of strategic alternatives, risks related to the execution of our business plans and strategies, risks associated with the protection and enforcement of our intellectual property rights, as well as other risks and uncertainties 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.

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.

Recent Developments

We are exploring strategic alternatives for our biopolymers business and for our crop science program (“Yield10 Bioscience”). Outside strategic interest in our biopolymers business as well as a challenging financing environment are key considerations leading to this development. Strategic alternatives may include selling our specialty biopolymers business as an operating business to a third party with strategic interest in acquiring the business and either refocusing our resources on development and commercialization of our Yield10 program or potentially selling Yield10 as well.

We are currently engaged in discussions with interested parties regarding the potential sale of our biopolymers business as an operating business and may engage in discussions with additional parties as we progress through our strategic review. In addition, we have been working on the potential “spin out” of Yield10 for the past several months and are currently gauging interest among agriculture industry players and venture investors for the potential sale of Yield10 as an alternative to continuing to develop the crop science business internally. There are numerous risks and uncertainties associated with our exploration of strategic alternatives and there can be no assurance that these efforts will be successful.

As of March 31, 2016, the Company had unrestricted cash and cash equivalents of approximately \$5.3 million. Our capital resources are not sufficient to fund our operations for a twelve-month period and, therefore, raise substantial doubt about our ability to continue as a going concern.

We are actively engaged in efforts to secure additional capital resources before the end of June. In addition to traditional equity financing and our equity facility with Aspire Capital, we are exploring the availability of equity or debt bridge financing, including debt financing that may be secured by the Company’s intellectual property and other assets. We are also considering select opportunities to monetize assets to provide resources necessary for the completion of our strategic review process. There can be no assurance that these efforts will be successful. If we are not able to secure such additional funding or otherwise fund our strategic review process and operations, we will be forced to wind down some or all of our operations and pursue options for liquidating the Company’s assets, including inventory, equipment and intellectual property.

On May 17, 2016, Metabolix, Inc. (the “Company”) entered into an amendment (the “Amendment”) to its license agreement with Tephra, Inc. (“Tephra”), a Lexington, Massachusetts based medical device company that licenses Metabolix PHA biopolymer technology for use in certain medical applications. Two of the Company’s directors, Matthew Strobeck and Anthony J. Sinskey, serve on the Board of Directors of Tephra, and the Company owns 648,149 shares of the Series A Convertible Preferred Stock of Tephra.

Under the Amendment Tephra made a \$2.0 million lump sum payment to Metabolix. In exchange, Metabolix agreed to forgo future royalties under its existing license agreements with Tephra. Metabolix also agreed to provide two additional Metabolix production strains to Tephra and granted Tephra a royalty-free license to related intellectual property for use in the production of Tephra’s medical devices.

Overview

Metabolix is an advanced biomaterials company that has been 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 has been based on the performance and differentiation of our materials, aiming 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 have positioned 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 recent years we have targeted 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 have focused on opportunities where our PHA biopolymers are used as property modifiers or process aids. We have also targeted applications where the performance, biodegradability, biocontent 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, as well as PHA latex and other PHA coatings for paper and cardboard.

In early 2015, we significantly increased the nameplate capacity at our contracted pilot manufacturing facilities to 600,000 pounds per year of our Mirel PHA biopolymers and 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. We have built a patent estate around our platform technologies and a variety of inventions relevant to the commercialization of PHA biopolymers.

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 refocusing our crop science program around new genetic and informatics tools and intellectual property for enhancing the photosynthetic capacity of plants. In 2015, we launched our refocused crop science program under the name “Yield10 Bioscience.” We believe that our Yield10 GMO yield improvements can be pursued in select crops where the value potential is high and that are well suited to progressing development based on the Yield10 technology through field trials. We also believe that gene targets from molecular analysis of our high yield GMO model plants camelina and switchgrass, already in hand, with additional targets we expect to identify from future molecular analysis of high yield GMO work in our core crops (corn, canola and soybean) will be useful as genome editing targets for improved yield, drought tolerance or other traits in a wide range of food and feed crops. Genome editing has the potential to broaden the range of crops developed using these technologies and reduce timelines for regulatory approval.

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.

THE OFFERING

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

Common stock outstanding 27,727,176 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 May 20, 2016, there were 27,727,176 shares of our common stock outstanding (9,547,380 shares held by non-affiliates) including the 300,000 Commitment Shares issued to Aspire Capital but 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 and held by non-affiliates as of May 20, 2016, such shares would represent 15.5% of the total common stock outstanding or 34.8% of the non-affiliate shares of common stock outstanding as of May 20, 2016. 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.

(1) The total shares of common stock outstanding is based on 27,727,176 shares outstanding as of May 20, 2016, 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;
- 945,987 shares issuable upon exercise of outstanding stock options;
- 744,492 shares issuable pursuant to outstanding restricted stock units; and
- 3,284,385 shares available for future grants under our equity incentive and employee compensation plans.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we have registered 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. All 5,393,545 shares of common stock are being offered pursuant to this prospectus.

On November 9, 2015, the conditions necessary for purchases under the Purchase Agreement to commence were satisfied. 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.

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.

As of March 31, 2016, the Company held unrestricted cash and cash equivalents of approximately \$5.3 million and we have \$20 million of availability under our equity facility with Aspire Capital, although market conditions may limit the extent to which the Company can draw on this facility. 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. 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, 2015 with respect to this uncertainty.

We are exploring strategic alternatives for our biopolymers business as an operating business and for our Yield10 crop science program. Outside strategic interest in our biopolymers business as well as a challenging financing environment are key considerations leading to this development. Strategic alternatives may include selling our biopolymers business as an operating business to a third party with a strategic interest in acquiring the business and either refocusing our resources on development and commercialization of our Yield10 program or potentially selling Yield10 as well.

We are currently engaged in discussions with interested parties regarding the potential sale of the biopolymers business as an operating business and may engage in discussions with additional parties as we progress through our strategic review. In addition, we have been working on the potential “spin out” of Yield10 for the past several months and are currently gauging interest among agriculture industry players and venture investors for the potential sale of Yield10 as an alternative to continuing to develop the crop science business internally. There are numerous risks and uncertainties associated with our exploration of strategic alternatives and there can be no assurance that these efforts will be successful.

We are actively engaged in efforts to secure additional capital resources before the end of June. In addition to traditional equity financing and our equity facility with Aspire Capital, we are exploring the availability of equity or debt bridge financing, including debt financing that may be secured by the Company’s intellectual property and other assets. We are also considering select opportunities to monetize assets to provide resources necessary for the completion of our strategic review process. If we are not able to secure such additional funding or otherwise fund our strategic review process and operations, we will be forced to wind down some or all of our operations and pursue options for liquidating the Company’s assets, including inventory, equipment and intellectual property. Even if the Company completes a sale or other strategic alternative with respect to our biopolymers business, additional funding may be required. There can be no assurance that our 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. Our future revenues, expenses and cash usage will depend on which, if any, strategic alternatives are completed. Available capital resources may be consumed more rapidly than currently expected due to (a) lower than expected sales of our biopolymer products as a result of slow market adoption; (b) lower than expected revenues from grants, licenses, and service fees related to our Yield10 technologies; (c) changes we may make to the business that affect ongoing operating expenses; (d) changes we may make to our business strategy; (e) changes in our research and development spending plans; and (f) other items affecting our forecasted level of expenditures and use of cash resources, including our exploration of strategic alternatives.

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 equity financing transactions. If we raise additional funds through collaboration, licensing or other similar arrangements, it may be

necessary to relinquish valuable rights to potential products or proprietary technologies, or grant licenses on terms that are not favorable to the Company.

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, we have recorded losses since our inception, including our fiscal year ended December 31, 2015 and quarter ended March 31, 2016. At March 31, 2016, our accumulated deficit was approximately \$332 million. 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 either the biopolymers business or the Yield10 crop science program will generate sufficient revenue to become profitable. If we continue to operate either business, 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 of our business, including the ongoing expenses of research, product development and market development. The amount we spend will impact our ability to become profitable and this will depend, in part, on the number of new technologies 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.

Risks Relating to our Biopolymers Business

If we are not able to obtain sufficient funding to complete strategic alternatives or otherwise continue our business, we will be forced to wind down some or all of our operations and pursue options for liquidating the Company's assets, including inventory, equipment and intellectual property. Our ability to complete a strategic alternative with respect to our specialty biopolymers business will be affected by the Risk Factors described further below.

Our biopolymer products may not achieve market success.

Implementation of our strategy for building a commercially successful specialty biopolymers business is at an early stage. 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, but the time required for conversion of customers to commercial purchases is often long. 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;
- 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.

It may not be possible 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 do not have the necessary funds to finance the construction or modification of a commercial manufacturing facility, and it may not be possible 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. There can be no assurance that we will be successful in establishing such a manufacturing partnership. Further, if we do succeed in establishing such a partnership, the terms of such an arrangement may require us to relinquish valuable rights or subject us to other terms that are not favorable to us.

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, capital investments are likely to be needed before the market demand for our products is proven. If the commercial manufacturing capacity that is built or otherwise obtained is not appropriate to the level of market demand, manufacturing costs may not be economical.

It may not be possible 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 raw materials can be purchased in sufficient quantities, at acceptable prices, or in a timely manner.

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.

Our biopolymers face and will face substantial competition.

There is and will be 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 us. 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.

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. 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 relating to genetically-engineered organisms could adversely affect acceptance of our products.

The success of our biopolymers will be influenced by the price of petroleum relative to the price of biobased feedstocks.

The success of our biopolymers may 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. As the price of plant sugar feedstocks increases and/or the price of petroleum decreases, our biobased products may be less 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 which are subject to change, 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, regulations relating to marketing claims, and environmental, health and safety laws. 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. Further, our compliance with governmental regulations that are not enforced against our competitors could put us at a competitive disadvantage. 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. However, the regulatory framework governing biopolymers is complex, difficult to predict and largely beyond our control. 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.

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.

Risks Relating to our Yield10 Crop Science Program

If we are not able to obtain sufficient funding to complete strategic alternatives or otherwise continue our business, we will be forced to wind down some or all of our operations and pursue options for liquidating the Company's assets, including inventory, equipment and intellectual property. Even if we complete a sale or other strategic alternative with respect to our biopolymers business, additional funding may be required if we decide to continue the Yield10 program. Our ability to complete a strategic alternative with respect to our Yield10 program will be affected by the Risk Factors described further below.

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. We expect that collaborations with established agricultural industry companies will be required to successfully develop and commercialize our innovations. The industry is highly concentrated and dominated by a small number of large players, which could impact efforts to form such collaborations. We may not be successful in establishing or maintaining suitable partnerships, and 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;
- 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. Substantial liability and/or legal expenses may be incurred 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 2016 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.

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.

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:

- 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.

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% or more 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 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 December 31, 2015, our officers, directors and stockholders who hold at least 5% of our stock beneficially own a combined total of approximately 73.4% of our outstanding common stock, including shares of common stock subject to stock options and warrants that are currently exercisable or are exercisable within 60 days after December 31, 2015. 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 December 31, 2015, Jack W. Schuler and William P. Scully beneficially owned approximately 49.3% 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 have registered 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.

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 choose not to issue and sell any securities pursuant to the Purchase Agreement. This anticipated use of net proceeds from the sale of our common stock to Aspire Capital under the Purchase Agreement represents our intentions based upon our current plans and business conditions.

COMMON STOCK PRICE RANGE

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

	High	Low
Year ending December 31, 2016:		
First Quarter	\$ 2.29	\$ 0.86
Second Quarter (through June 7, 2016)	\$ 1.92	\$ 0.63
Year ended December 31, 2015:		
First Quarter	\$ 7.68	\$ 2.22
Second Quarter	\$ 5.10	\$ 2.93
Third Quarter	\$ 4.07	\$ 1.07
Fourth Quarter	\$ 3.98	\$ 1.25
Year ending December 31, 2014:		
First Quarter	\$ 10.02	\$ 6.60
Second Quarter	\$ 7.92	\$ 4.50
Third Quarter	\$ 9.06	\$ 2.16
Fourth Quarter	\$ 5.58	\$ 1.50

On June 7, 2016, the last reported sale price per share of our common stock was \$0.72 per share. As of June 6, 2016, there were 27,752,176 shares of our common stock outstanding held by approximately 43 stockholders of record.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our capital stock and do not expect to pay any cash dividends for the foreseeable future. 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.

DILUTION

The net tangible book value of our common stock as of December 31, 2015 was \$13,028,000, or \$0.48 per share. Net tangible book value per share represents our total tangible assets less our total tangible liabilities, divided by the number of shares of common stock outstanding.

Net tangible book value dilution per share to new investors represents the difference between the amount per share paid by purchasers in this offering and the pro forma net tangible book value per share of our common stock immediately after the completion of this offering. After giving effect to our assumed sale of all issuance and sale of 5,093,545 shares of common stock in this offering at an assumed public offering price of \$0.50 per share (based on the adjusted minimum floor price at which sales may be made), not including the 300,000 Commitment Shares issued to Aspire Capital as a fee for its commitment to purchase shares of our common stock, our as adjusted net tangible book value as of December 31, 2015 would have been approximately \$15,575,000 or \$0.48 per share of common stock. This represents an immediate increase in net tangible book value of \$0.00 per share to existing shareholders and an immediate dilution in net tangible book value of \$0.02 per share to purchasers of common stock in this offering at the assumed offering price, as illustrated in the following table:

Public offering price per share (assumed at adjusted minimum floor price for sales)		\$	0.50
Net tangible book value per share as of December 31, 2015, before this offering	\$	0.48	
Increase per share attributable to new investors	\$	0.00	
Pro forma net tangible book value per share at December 31, 2015 after giving effect to the offering	\$	0.48	
Dilution per share to new investors	\$	0.02	

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Please see Item 7 in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015, filed with the Securities and Exchange Commission on March 29, 2016 and Item 2 of our Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2016, filed with the Securities and Exchange Commission on May 16, 2016, each of which are incorporated herein by reference, for a discussion of our financial condition and results of operations.

QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Our exposure to market risk is confined to our cash, cash equivalents and marketable securities. The unrestricted cash and cash equivalents and marketable securities are held for working capital purposes. Our primary investment objective is capital preservation, with a secondary objective of generating income on such capital. We do not enter into investments for trading or speculative purposes.

Interest Rate Risk

We historically invest in high-quality financial instruments, primarily money market funds, federal agency notes, U.S. treasury notes, investment-grade commercial paper, and corporate debt securities. All of our interest-bearing securities are subject to interest rate risk and could decline in value if interest rates fluctuate. Because of the short-term maturities of our current cash equivalents and short-term investments, we do not believe that an increase in market rates would have any significant impact on the realized value of our marketable securities. However, in a declining interest rate environment, as short-term investments mature, reinvestment occurs at less favorable interest rates which would negatively impact our investment income. Exposure to market rate risk for changes in interest rates relates to our unrestricted cash and cash equivalents, totaling \$12,269 at December 31, 2015. Based on a hypothetical 10% adverse movement in interest rates, we believe the potential annual losses in future earnings and cash flows would be immaterial.

Currency Exchange Rates

We have foreign currency exposure to exchange rate fluctuations and particularly with respect to the Canadian dollar. Therefore, our investment in our subsidiaries is sensitive to fluctuations in currency exchange rates. The effect of a change in currency exchange rates on our net investment, including intercompany loans and payables, in international subsidiaries is reflected in the accumulated other comprehensive (loss) income component of stockholders' equity. If rates of exchange for the Canadian dollar were to have depreciated immediately and uniformly by 10% relative to the U.S. dollar from levels at December 31, 2015, the impact to stockholders' equity would be immaterial.

BUSINESS

Recent Developments

We are exploring strategic alternatives for our biopolymers business and for our Yield10 crop science program. Outside strategic interest in our biopolymers business as well as a challenging financing environment are key considerations leading to this development. Strategic alternatives may include selling our biopolymers business as an operating business to a third party with strategic interest in acquiring the business and either refocusing our resources on development and commercialization of our Yield10 program or potentially selling Yield10 as well.

We are currently engaged in discussions with interested parties regarding the potential sale of our specialty biopolymers business as an operating business and may engage in discussions with additional parties as we progress through our strategic review. In

addition, we have been working on the potential “spin out” of Yield10 for the past several months and are currently gauging interest among agriculture industry players and venture investors for the potential sale of Yield10 as an alternative to continuing to develop the crop science business internally. There are numerous risks and uncertainties associated with our exploration of strategic alternatives and there can be no assurance that these efforts will be successful.

As of March 31, 2016, the Company had unrestricted cash and cash equivalents of approximately \$5.3 million. Our capital resources are not sufficient to fund our operations for a twelve-month period and, therefore, raise substantial doubt about our ability to continue as a going concern.

We are actively engaged in efforts to secure additional capital resources before the end of June. In addition to traditional equity financing and our equity facility with Aspire Capital, we are exploring the availability of equity or debt bridge financing, including debt financing that may be secured by the Company’s intellectual property and other assets. We are also considering select opportunities to monetize assets to provide resources necessary for the completion of our strategic review process. There can be no assurance that these efforts will be successful. If we are not able to secure such additional funding or otherwise fund our strategic review process and operations, we will be forced to wind down some or all of our operations and pursue options for liquidating the Company’s assets, including inventory, equipment and intellectual property.

On May 17, 2016, Metabolix, Inc. (the “Company”) entered into an amendment (the “Amendment”) to its license agreement with Tepha, Inc. (“Tepha”), a Lexington, Massachusetts based medical device company that licenses Metabolix PHA biopolymer technology for use in certain medical applications. Two of the Company’s directors, Matthew Strobeck and Anthony J. Sinskey, serve on the Board of Directors of Tepha, and the Company owns 648,149 shares of the Series A Convertible Preferred Stock of Tepha.

Under the Amendment Tepha made a \$2.0 million lump sum payment to Metabolix. In exchange, Metabolix agreed to forgo future royalties under its existing license agreements with Tepha. Metabolix also agreed to provide two additional Metabolix production strains to Tepha and granted Tepha a royalty-free license to related intellectual property for use in the production of Tepha’s medical devices.

Overview

Metabolix is an advanced biomaterials company that has been 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 has been based on the performance and differentiation of our materials, aiming 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 have positioned 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 recent years we have targeted 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 have focused on opportunities where our PHA biopolymers are used as property modifiers or process aids. We have also targeted applications where the performance, biodegradability, biocontent 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, as well as PHA latex and other PHA coatings for paper and cardboard.

In early 2015, we significantly increased the nameplate capacity at our contracted pilot manufacturing facilities to 600,000 pounds per year of our Mirel PHA biopolymers and 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. We have built a patent estate around our platform technologies and a variety of inventions relevant to the commercialization of PHA biopolymers.

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 refocusing our crop science program around new genetic and informatics tools and intellectual property for enhancing the photosynthetic capacity of plants. In 2015, we launched our refocused crop science program under the name "Yield10 Bioscience." We believe that our Yield10 GMO yield improvements can be pursued in select crops where the value potential is high and that are well suited to progressing development based on the Yield10 technology through field trials. We also believe that gene targets from molecular analysis of our high yield GMO model plants camelina and switchgrass, already in hand, with additional targets we expect to identify from future molecular analysis of high yield GMO work in our core crops (corn, canola and soybean) will be useful as genome editing targets for improved yield, drought tolerance or other traits in a wide range of food and feed crops. Genome editing has the potential to broaden the range of crops developed using these technologies and reduce timelines for regulatory approval.

Our Technology and Core Capabilities

We believe we have one of the most advanced capabilities to perform metabolic pathway engineering in the world and that we are skilled in our ability to integrate the biotechnology we develop into large scale industrial production processes to support manufacturing of our PHA biopolymers. In particular, we believe we have unique capabilities with respect to harnessing the metabolic pathways involved in the production of a wide range of bioplastic monomers and the ability to polymerize, accumulate and harvest these bioplastics from living cells. We are also continuing to develop key capabilities in the areas of biopolymer product development and customer focused applications development and technical support.

We have demonstrated that our technology and core capabilities enable us to:

- design and engineer living organisms to perform a series of chemical reactions that convert a feedstock to an end product in a highly efficient and reliable manner;
- integrate those organisms into reliable, large scale industrial fermentation processes;
- develop highly efficient recovery technology to separate the end product from the fermentation broth;
- tailor the properties of our end product to suit customer needs;
- develop new applications and commercial opportunities for these products;
- develop new formulations and compounds based on these products;
- provide sales and technical support to our customers who use these products; and
- develop proprietary, breakthrough technologies that may be useful for improving yield in major crops.

Product Development Process

Biology and Genetic Engineering

We have identified and chromosomally inserted into organisms a series of genes to produce several enzymatic proteins, and have done so in such a way that they are expressed to execute a series of reactions in a balanced manner to produce PHAs with controlled structures and performance as the end-product of interest. We believe that we have advanced capabilities based on over 20 years of development, taking early stage gene/pathway discovery through the entire development and scale-up process and final

implementation of that technology at commercial scale using robust industrial microbial production systems. We believe these capabilities enable us to produce specialty PHA biopolymers with unique properties.

Industrial Fermentation Process Engineering

We have tightly integrated our fermentation scale-up research capabilities with our genetic engineering capabilities to create a feedback loop where data from fermentation experiments inform microbial design and where microbial engineering approaches can guide the fermentation group to structure the optimal protocols (recipes) for running fermentations. Based on this technology we have demonstrated the ability to produce a range of different biopolymers on a common fermentation platform.

Chemical Process Engineering for Biopolymer Recovery

Another element of our product development process involves process chemistry and chemical engineering to separate the biopolymer from the biological cell material once fermentation is complete. We have a dedicated team that has developed a proprietary process for recovery of PHA biopolymer. That process produces PHA biopolymer at a high level of purity without damaging the structure of the polymer and has operated effectively at a commercial scale. We have successfully demonstrated our ability to efficiently isolate the range of polymers necessary to meet and expand our range of target applications. These polymers can be routinely produced free from cell debris and processed into high quality biomaterials.

Polymer Science and Product Development

In the area of biopolymers, our product development process involves tailoring polymer properties and polymer blends to provide the desired end product properties and meet the processing requirements for specific customer applications. During 2015 we further expanded our capabilities and facilities to evaluate PHAs as modifiers and process aids in targeted PVC and PLA applications. We also upgraded facilities to develop functional biodegradation products with controlled degradation profiles based on specific customer application needs. Our product development team has considerable expertise in polymer science and to date has developed advanced formulation and processing technology for a wide variety of customer applications and processing methods. We are continuing to work with customers and channel partners to optimize our polymers and polymer formulations as we commercialize our products in target applications.

In summary, we believe we have successfully integrated capabilities in biology, genetics, fermentation process engineering, chemical engineering and polymer science to provide high value biobased and biodegradable polymer solutions for customers. We believe this integrated set of capabilities will be a source of competitive advantage as our business develops.

Market Opportunity

Our target markets and product applications offer substantial opportunity for innovation and value creation. In certain applications, we can position our PHA biopolymers as biobased performance additives that contribute biocontent, while improving the overall performance of material systems. In other applications, our PHA biopolymers can be used to replace conventional plastics based on market drivers for renewable and biodegradable materials that have the potential to reduce the use of petroleum-based feedstocks and decrease plastic pollution in the environment. To that end, we are targeting our resources on the use of our 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 PVC and PLA. We are also targeting applications where the performance, biodegradability, biocontent and other attributes of our PHA biopolymers provide unique functional advantages, such as biodegradation, required by such applications, including PHA latex and other PHA coatings for paper and cardboard, and PHA resins for films and molded articles.

The Plastics Market

The world's annual consumption of plastic materials has increased from around 5 million metric tons in the 1950s to nearly 311 million metric tons in 2014 and is estimated to be \$0.5 trillion in size. Plastics are durable, lightweight and useful in a broad range of applications from packaging to engineering-grade automotive materials, driving continued growth in the plastics market. A majority of these plastics are made from fossil feedstocks, including crude oil and natural gas.

According to Global Industry Analysts, Inc., the global market for PVC is an estimated 39 million metric tons produced annually. PVC is a versatile polymer used in a broad range of applications including construction materials, wire and cable and medical disposables. Significant amounts of additives are used in PVC formulations (typically 20-40% of the formulation) to improve processing, plasticization and performance. Based on industry studies, the property modifier and process aid segment of the current

global PVC represents approximately 4.1% of the PVC market based weight or approximately 3.5 billion pounds per annum with an aggregate market value of approximately \$6 billion annually according to management estimates based on these market studies.

The Freedonia Group cites consumer preferences for more sustainable materials and improved performance of bioplastic resins and commodity plastics produced from biobased sources as key factors driving the use and growth of bioplastics, which includes both non-biodegradable plastics such as PET with increased biocontent as well as biodegradable plastics. According to Freedonia, global demand for biobased and biodegradable plastics will grow 19 percent annually to 950,000 metric tons in 2017. Through 2017, starch-based bioplastics and PLA will account for the majority of biodegradable bioplastic demand, followed by other biobased plastics, such as PHA/PHB, cellulose, polybutylene succinate ("PBS") and fossil fuel-based biodegradable plastics, representing approximately 40 percent of global bioplastic demand. According to the German-based research firm nova-Institut, the global production of PLA is currently 180,000 tons per annum and is expected to reach 800,000 tons per annum by 2020. We believe our PHA performance additives for PLA can improve the performance of PLA in a range of potential applications, thereby expanding the market potential for PLA.

It is well established that most fossil feedstock-based plastics do not biodegrade in the environment. Instead, they congest landfills and pollute the land, waterways and oceans. According to the U.S. Environmental Protection Agency, an estimated 32 million tons of plastic entered the U.S. municipal solid waste stream in 2011. It is estimated that approximately 10.5 percent of landfill weight is plastics. In addition, every year approximately 225,000 tons of plastic waste ends up in the world's oceans. We believe our PHA biopolymers, which have excellent biodegradation profiles in composting, soil and marine environments, can contribute to new and alternative waste management solutions.

Biopolymers Platform

Overview

We are focused on building a commercially successful specialty biopolymers business, with attractive margins, based on the unique properties of our PHA biopolymers. We are targeting market opportunities driven by the important value-adding role our biopolymers can play as components of other material systems. Our commercial development activities have focused on our target application spaces of PVC processing aids and property modifiers, PLA modification, functional biodegradation and paper coating.

Former Alliance with Archer Daniels Midland Company

Mirel biopolymers were produced successfully at industrial scale for two years under the Telles joint venture with ADM that was in effect from 2004 through 2011. The product was produced at very high quality and in a targeted range of grades suited to different customer uses. In 2015, we successfully deployed our latest amorphous PHA technology into pilot scale production, and we are using this new pilot material, together with inventory we acquired in connection with the dissolution of the ADM alliance, to support our ongoing commercial and development efforts in select target application spaces.

Target Application Spaces for Metabolix Biopolymers

Although we believe there are significant opportunities across many markets and applications, we are initially focusing our commercialization efforts on select application spaces where we think the performance, biodegradability, biocontent and other properties of our PHA biopolymers are a good fit. These are:

- Performance modifiers and process aids for PVC;
- Performance modifiers for PLA;
- Coatings for paper and cardboard; and
- Functional biodegradation (e.g., resins and compounds for films and molded articles for controlled in-situ biodegradation).

We believe these application spaces have unmet needs that can be addressed with our PHA materials. Our biopolymers can enable improved performance qualities and/or reduced cost when used as an additive and blended with other polymers such as PVC and PLA. In addition, certain applications have the need or a preference for materials that are biobased and biodegradable either for branding value, because of regulatory requirements or because biodegradability offers a useful property such as new end-of-life solutions like soil or marine biodegradation, composting or anaerobic digestion. We are engaged in focused product and application

development activities in these segments. We are working with potential customers to determine their specific needs and develop end-use markets, and we are in the process of qualifying our materials for certain customer applications.

Performance Additives

We are developing PHA biopolymers as performance additives. Metabolix biopolymer resins are either miscible or highly compatible as a dispersed modifier with a broad range of biobased and petroleum-based materials and can improve a range of performance attributes such as toughness, barrier properties, processability and flexibility through blending with these materials. We are initially focused on developing polymeric modifiers for PVC, a plastic with diverse uses ranging from construction materials to medical applications. Compounded PVC products are typically formulated with significant amounts of additives, which are used to make the PVC compound suitable for its end-use application, improve the processability of the PVC compound and enhance the performance of the PVC article.

We are developing biobased polymeric modifiers for rigid, semi-rigid and flexible PVC compounds. We have shown that our polymeric modifiers can provide toughness, flexibility and permanence in addition to enhancing processing when added to PVC. For example, we have studies that show our PHA polymeric modifiers have the potential to improve PVC toughness beyond that achievable with leading polymeric modifiers and at the same time serve as a non-migrating, non-phthalate, high molecular weight biobased plasticizer.

We are working with customers to identify suitable PVC additives applications, which could lead to broader addressable market opportunities for our materials beyond those that focus on biodegradation. Target applications based on customer projects undertaken in 2014 and 2015 include different types of vinyl flooring, roofing membranes, wire and cable jacketing, structural profiles and PVC films.

We also are working with customers to develop applications that use our PHA performance additives to upgrade the physical properties, processability, and value of PVC recyclate in the production of construction materials containing recycled PVC in place of or in addition to virgin PVC.

Our PHA materials can provide significant benefits in PVC wood polymer composites and other highly filled systems used for structural profiles. We have shown that at low loading levels PHA can significantly increase the incorporation of wood flour or mineral fillers in the formulation resulting in a significant increase in the mechanical properties of the end-product. We are working with customers to develop commercial opportunities based on the unique attributes of our PHA biopolymers.

In addition to our efforts in PVC, we are developing PHA polymeric modifiers suitable for enhancing the performance of other polymers. Polylactic acid (PLA) is the leading biobased, compostable polyester on the market today and is used in application areas such as food and consumer product packaging, food service wares, films, thermoform sheets and non-woven textiles. We have conducted significant development work around toughening and enhancing the ductility of PLA with our PHA additives. We believe the ability to address these inherent weaknesses in PLA could significantly expand the application space for PLA, and we have shown that our Mirel amorphous PHA rubber modifiers can improve PLA performance while retaining the clarity, biocontent and compostability of the resulting material.

From our initial work in PVC and PLA modification, we believe Metabolix has the potential over time to develop a family of polymeric property modifiers that have unique or improved functionality compared to current fossil derived materials, that can be used in a range of material systems including PVC and PLA and that are both biobased and biodegradable.

Coatings for Paper and Cardboard

There is a significant need for innovative coatings for paper and cardboard. PHA coatings being developed by Metabolix are derived from renewable feedstocks and, like our other PHA products, can be compostable, marine biodegradable, and anaerobically digestible while performing comparably to polyethylene coatings commonly used today. We also have generated data showing that our development grade biobased PHA latex coatings possess excellent barrier and adhesive properties and are compatible with the re-pulping operations typically used to recycle paper and corrugated cardboard. We believe there is promising market potential for PHA coated paper and are continuing to develop this application technology and related commercial opportunities. If the developments in this area are successful, potential applications could range from repulpable/recyclable PHA coated paper and cardboard for consumer goods and food packaging to PHA coated paperstock for food service items.

Marine Biodegradable Micropowders

In 2015 we entered into a global, exclusive commercial and technology alliance with Honeywell International, Inc. ("Honeywell") to offer PHA biopolymers under its Honeywell Asensa® product line for use in cosmetics and personal care products. Earlier this year, Honeywell informed us that it is discontinuing its line of Asensa® personal care additives to refocus its efforts on core applications in the broader additives market. In light of this development, as well as a new U.S. federal law banning the use of plastic microbeads in cosmetics, we are re-evaluating this market. The Company plans to leverage the experience gained in the alliance with Honeywell as we evaluate opportunities for Mirel biopolymers in cosmetics and personal care products. With respect to marine biodegradable microbeads, we plan to take our lead from brand owners and formulators as they work through their strategies for reformulating products for U.S. and international markets in accordance with applicable regulations. We expect this will take some time to sort out in the marketplace, and in the meantime, Honeywell has transitioned to us unused commercial product, R&D results and customer contacts.

Functional Biodegradation

Our biopolymers are unique biobased materials for applications requiring functional biodegradation. Since PHAs are produced naturally in living organisms such as microbes, our PHA biopolymers can be biodegraded by similar microbes present in ambient environments such as soil and water. Our biopolymers can also be formulated or compounded with other biodegradable polymers to provide customers with customized product performance and controlled biodegradation tailored for specific applications and environments such as soil or water.

The soil biodegradability profile of PHA makes our products uniquely suited for resins used to produce biodegradable films and parts for horticultural and agricultural uses. Applications such as plant pots, vine clips, sod netting and agricultural film have a strong need for soil biodegradability like that offered by Mirel biopolymers. In these applications, the natural biodegradation process for our PHA biopolymers in the soil can provide a sustainable alternative to conventional plastics and save labor and other costs related to their disposal.

Like all other PHA materials, the marine biodegradability profile of Mirel biopolymers is unmatched in the industry as compared to other commercially available biodegradable materials such as PLA, PBAT or PBS. Mirel biopolymer resins biodegrade in the marine environment due to microbial activity, which makes them particularly suitable for the production of marine and aquatic biodegradable films and parts. Metabolix has worked on several projects with government agencies and universities to validate the use of Mirel biopolymers in shoreline applications.

Studies have noted that the world's oceans show increasing levels of persistent plastic particles of a size ingestible by marine creatures at the bottom of the food chain. Larger plastic items are also accumulating in substantial quantities in certain parts of the ocean, and marine birds and mammals have been found dead from ingesting or getting tangled in plastic debris. Mirel biopolymers allow brand owners the opportunity to offer a product that will biodegrade if inadvertently released into the environment or in applications where *in-situ* marine biodegradation is a key attribute such as erosion control and shoreline restoration.

Metabolix expects to continue working with customers on a variety of other applications where biodegradation of the polymer is a performance requirement. We have also worked with customers to develop pond water and aquarium water denitrification treatment systems based on the biodegradation and microbial activity of our biopolymers. In 2015, we signed a global, exclusive distribution agreement with Kolar Filtration to market and promote Metabolix PHA-based denitrification pellets for water treatment applications. This agreement streamlines the process for compounding and supplying finished product to established customers focused on ornamental and hobby aquaria, and we expect Kolar to expand the use of PHA-based denitrification into larger scale applications including fresh water ponds, hatcheries and commercial aqua farming.

The Value Proposition for Metabolix Biopolymers

Our strategy is based on the performance of our materials. With proprietary biopolymer formulations we aim to address unmet needs of our customers and leverage the distinctive properties of our PHAs to improve critical product qualities that enable our customers to enhance the value of their products and/or achieve cost savings through their value chain.

As such, we are positioning our Mirel biopolymers as specialty materials that offer a broad and attractive range of performance and processing properties compared to other bioplastics and performance additives. Our Mirel biopolymers can be used to deliver biobased content in an end use application, as an additive or modifier to improve performance of other polymers including conventional plastics (e.g. PVC) or other bioplastics (e.g., PLA) and/or to deliver the required biodegradation profile of an end use application.

We believe our Mirel biopolymers are differentiated and offer unique benefits in end use applications because of the following factors:

Biobased Content. Our Mirel PHA biopolymers products are produced using fermentation which converts industrial sugar (a biobased feedstock) into PHA biopolymer. Our biobased polymers can be used in neat form, or can be combined with other polymers to make plastic formulations and compounds with targeted amounts of biocontent. This can be a key factor in material selection by an end-use customer.

Biodegradability. Mirel biopolymers are available with a range of biodegradation profiles. For example, our PHA biopolymers will biodegrade due to microbial activity in a wide variety of conditions, including home and industrial compost systems, soil, anaerobic environments such as anaerobic digesters and septic systems, and marine and fresh water environments. The rate and extent of biodegradability will depend on the specific ingredients included in the particular Mirel biopolymer formulation, the size and shape of the articles made from our Mirel biopolymers as well as the specific end-of-life environment. However, like all bioplastics and organic matter, Mirel biopolymers are not designed to biodegrade in conventional, non-active landfills. Many plastics marketed as "biodegradable" will only degrade under certain industrial composting conditions.

Performance Enhancement. Our PHA biopolymers possess unique chemistries that make them useful as additives or modifiers to improve the performance, properties and processing of other polymer materials including PVC, PVC recyclate, and PLA. While biocontent and biodegradability are not the drivers of enhanced performance, they are added benefits for those end use applications where improved performance is required and biobased content and/or biodegradability is desired.

Physical Properties. Mirel biopolymers possess a particularly broad range of physical properties, which makes them suitable for applications requiring hard/stiff polymers as well as those requiring soft/flexible polymers.

Processability. Our PHA biopolymers can be processed in many types of existing conventional polymer conversion processes typically used for petroleum-based plastic, which makes them suitable for applications requiring molded parts, films, thermoformed parts, coatings, fibers and non-wovens, among others.

Upper Service Temperature. Certain Mirel biopolymers will withstand temperatures in excess of 100° C, i.e., the boiling point of water, an important threshold. Some formulations of Mirel biopolymers can withstand temperatures up to 130° C.

Resistance to Hydrolysis. While Mirel biopolymers will biodegrade in marine and fresh water environments through natural processes mediated by microbes, they are resistant to chemical hydrolysis with cold or hot water over the intended life span of the product. This is an important feature distinguishing Mirel biopolymers from many other biodegradable polymers where the primary mechanism of degradation is hydrolysis followed by further microbial degradation of the residues.

Product Form. Our PHA biopolymers can be produced in pellet form (for further processing by customers), in densified form or as a blend with other biobased and/or biodegradable materials. We may also provide our biopolymers in other forms as may be determined by the needs of our customers and their end use applications.

Biobased and Biodegradability Certification

Mirel biopolymers in neat form have the advantage in the marketplace of being both biobased and biodegradable while having comparable functional properties to petroleum-based polymers. However, because there is sometimes confusion about the use of the terms "biobased" and "biodegradable" in the marketplace, we conform to the following industry guidelines when making these claims.

We certify our biopolymer resin products individually based on their specific composition and formulation. We sell certain Mirel biopolymers that have received the Vinçotte certifications of "OK Biodegradability Soil" for natural soil biodegradability, "OK Biodegradability Water" for fresh water biodegradability, "OK Compost" for compostability in an industrial composting unit, and "OK Compost Home" for compostability in home composting systems. Vinçotte is the recognized European authority on materials inspection, certification, assessments and technical training. In addition to the Vinçotte certifications, certain Mirel biopolymers have been certified compostable by the Biodegradable Products Institute ("BPI"), an independent North American certifier of compostable material. BPI certification shows that Mirel biopolymers comply with the specifications established in the American Society for Testing and Materials standard ASTM D6400 for composting in a professionally managed composting facility.

Regulatory Requirements

In connection with expanded pilot scale manufacturing of our new amorphous PHA material, Metabolix made submissions in 2015 to the U.S. Environmental Protection Agency ("EPA") for a Premanufacturing Notice (PMN) in support of commercial sale of the product. As of October 2015, manufacturing of amorphous PHA product in the pilot facility was proceeding under a PMN granted by the EPA, and at the end of that month, we filed a Notice of Commencement which is required by the EPA within 30 days of first commercial manufacture.

Some applications for which Mirel biopolymers may be suitable, such as food packaging, and food service items, involve food contact, which, in the United States, is regulated by the U.S. Food and Drug Administration ("FDA"). The FDA process for food contact requires the submittal of a dossier, which is made up of a number of extraction studies conducted under specific guidelines.

Certain Mirel products have been cleared by the FDA for use in food contact applications. The conditions of use range from frozen food storage to hot filled or pasteurized to boiling water up to 100°C, including microwave reheating. These products are suitable for a wide range of food service and packaging applications including paper coatings, bags, cups, trays, squeeze bottles and injection molded parts like caps, closures and disposable items such as forks, spoons, knives, tubs, trays and hot cup lids. The clearance also includes products such as housewares, cosmetics and medical packaging.

Based on the potential for the use of our new amorphous PHA grades in applications requiring Food Contact Approval from the FDA, Metabolix has initiated contact with the agency to define the path forward for U.S. food contact application submission. Given the market opportunity and interest in food contact from customers in Europe, Metabolix also expects to make European regulatory submissions in 2016.

Sustainability Trends and Related Opportunities for Metabolix Biopolymers

The market for products with attributes of environmental responsibility or sustainability is an emerging business opportunity. We believe that numerous producers are positioning products as environmentally responsible or environmentally preferable to gain a commercial advantage as consumer preferences shift in this direction. In addition we have seen regulatory actions, such as bans, taxes, subsidies, mandates and initiatives, encouraging substitution of renewable and sustainable materials for petroleum-based incumbents. Regulatory actions or the anticipation of such actions, can provide additional motivation for producers to introduce sustainable materials in their products. While consumer preferences and the regulatory framework governing sustainable products is difficult to predict and largely beyond our control, we believe these trends present an interesting market opportunity for our biobased, biodegradable Mirel PHA biopolymers.

Plastic Industry Landscape

The plastics market is large, with many established players. The market has grown around the chemical processing of oil and natural gas, and is concentrated in the conventional, non-biodegradable petroleum-based segment.

Established companies in this segment include BASF, Braskem, Dow Chemical, DuPont, Ineos, LyondellBasell, Mitsubishi Chemical, Lotte and SABIC among many others. Many of these companies produce petroleum based bulk plastics as well as specialty additives that are used to modify and/or enhance the performance of bulk plastics.

Specialty additives include a variety of polymeric additives, process aids and property modifiers that are used to modify critical properties or enhance processing of bulk commodity plastics. Examples include rubber modifiers used to toughen bulk plastics for certain applications, high molecular weight process aids that improve processing of other polymers as well as high molecular weight compatibilizers used in composite materials such as mineral filled plastics. The most relevant competitive materials to specialty PHA additives are specialty high molecular weight acrylic modifiers, specialty terpolymers and copolyesters that are used as property modifiers and process aids in other bulk polymers, including PVC and PLA. These materials are typically offered by specialty materials divisions within the established chemical and materials companies including Dow Chemical, DuPont, Arkema, DSM and Mitsubishi Chemical, among others.

The price of conventional bulk petroleum-based plastic is volatile, as it is dependent on petroleum as a key manufacturing input. The specialty polymeric additives are typically priced based on value-in-use and therefore less sensitive to petroleum inputs. Given their unique properties and composition, these materials do not compete directly on price with alternative offerings that may fulfill a similar but not identical function and typically have different chemical structure.

A few companies, such as DuPont, DSM, Arkema and Braskem, have taken steps toward production of plastics based on renewable resources and are commercializing conventional plastics that use building blocks derived from renewable resources as components. However, these products are generally not biodegradable. Other producers of petroleum-based plastics, including BASF and Lotte, now produce certain petrochemical based plastics that are biodegradable in industrial compost environments, but are otherwise persistent in the environment and are still subject to the volatility of oil and natural gas prices.

Within the biodegradable, biobased plastic segment, there are three distinct technologies: PHA, PLA and starch-based biodegradables. Just as a wide variety of different petroleum-based plastics now serve the needs of the market; we believe that these three product classes are more complementary than competitive. We believe Mirel PHA biopolymers offer a broad range of properties and processing options, and can address numerous opportunities for environmentally attractive alternatives to conventional petroleum-based plastics. We further believe Mirel PHA biopolymers offer unique properties that make them well suited as specialty additives for use as PVC property modifiers and process aids, PLA performance enhancers and in PHA based paper coatings. Unlike PLA and most starch-based composite biodegradables, Mirel biopolymers can:

- biodegrade in natural soil and water environments, including the marine environment;
- biodegrade in either industrial or home composting environments;
- remain functional through a wide range of temperatures; and
- not break down in everyday use.

Companies active in PHA plastics include Bio-on, EcoMann, Kaneka, Mango Materials, Meredian, Newlight Technologies, Tianan, and Tianjin Green Biomaterials. The key players in PLA and starch-based biodegradable plastics include Biome, Corbion, Mitsui Chemical, NatureWorks, Novamont and Teijin. Corbion, the leading producer of lactic acid, has announced its intention to forward integrate into PLA. Our PHA biopolymers can be blended with many of these materials to improve their performance and other characteristics. In addition, there are companies that compound blends of various materials, including bioplastics.

Status of Yield10 Bioscience

Metabolix has been conducting a research program in crop science for more than 14 years with the intent to harness the renewable nature of plants to produce renewable bioplastics, chemicals and bioenergy from crops. Historically, the focal point of our crop technology efforts has been around creating proprietary systems to produce PHB, the simplest member of the PHA family of biopolymers, in high concentration in the leaves of biomass crops or in the seeds of oilseed crops for these applications.

Our crop science program has been a technically challenging long term effort. As we succeeded in increasing the levels of PHB produced in plants, we saw that this increase in PHB production typically resulted in impaired plant growth. This result is not unexpected, as we were diverting a significant fraction of the carbon fixed by the plants into the PHB, which represents a new carbon sink. Given these observations and our longer-term goal to develop commercially viable PHB-producing switchgrass and the industrial oilseed Camelina, we began developing new genetic and informatics tools and capturing intellectual property around enhancing the photosynthetic capacity of plants. Early success in this area led us to expand our thinking, as fixing more carbon through enhanced photosynthesis is core to improved crop yield and global food security. In general plants can be divided into two groups based on the type of photosynthesis system they use. The simplest type of photosynthesis system is known as C3 photosynthesis and is found in most of the food crops we eat including rice, wheat, soybean, potato etc. and the second type is a more complex form known as C4 photosynthesis because these plants have evolved a unique cellular structure to further concentrate carbon dioxide through the C4 pathway for the RUBISCO enzyme. C4 photosynthesis plants include corn, sugarcane and oil palm and can have up to 5 times higher yield than C3 photosynthesis plants. This yield difference achieved through evolution is why plant scientists believe it is biologically possible to further increase photosynthesis in C3 crops. Using the computational methods and technology developed in our PHB-focused crop science program we have observed increased plant photosynthesis, leading to increases in biomass, seed yield, starch and oil content.

In 2015, we refocused crop science program with a new mission and launched it under the name “Yield10 Bioscience.”

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 and provide innovative new solutions for enhanced 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 corresponding genes in both C3 and C4 food and feed crops, and are currently testing these genes in sugarcane and exploring partnerships to advance the technology in corn.

Although this research is at an early stage, we believe it may have applicability to a range of food, feed and biomass crops where there is a focus on improving crop yield. However, there can be no assurance that our efforts in this area will be successful or that we will be able to develop and implement suitable business arrangements for the spin out of this activity.

Intellectual Property

Our continued success depends in large part on our proprietary technology. We rely on a combination of patent, copyright, trademark and trade secret laws, as well as confidentiality agreements, to establish and protect our proprietary rights.

As of December 31, 2015, we owned approximately 330 issued patents and approximately 89 pending patent applications worldwide, and we have licensed from third parties approximately five issued patents and patent applications worldwide. Our extensive patent portfolio covers, among other things, fundamental biotechnology used to produce Mirel biopolymers as well as a range of biobased chemicals, biopolymer compositions, processes and derived products. Our intellectual property portfolio includes patents directed to compositions of polymers, genes, vectors, expression systems in plants and microbes, polymer compositions of matter and formulations, devices, coatings and films, as well as methods of manufacture and use. Our patents are set to expire at various times between 2016 and 2032.

In 2015, we filed 23 patent applications worldwide including applications for four new inventions. The applications filed covered genetically modified microbial strains for making biobased chemicals and PHAs from methane or methanol substrates, PHA additives for improved recycling of polymers and PHA additives for producing highly filled polymer formulations.

We were also granted or allowed 23 patent applications in 2015, seven in the U.S. and sixteen internationally. The inventions covered under these patents include PHA latex technology, PHA crosslinking technology, production of C5 chemicals as well as poly-5-hydroxyvalerate PHA from microorganisms using renewable materials as feed substrates and toughened PLA/PHA blends for film applications. We continue to seek and evaluate new technologies and related intellectual property that might enhance our Company's business competitiveness.

Our registered U.S. trademarks include *Metabolix*, *Mirel*, the Metabolix four-leaf design, the Mirel heart-leaf design, and *Bio-Industrial Evolution*. These marks and certain other trademarks have also been registered in selected foreign countries.

Employees

As of December 31, 2015, we had 68 full-time employees. Of those employees, 49 were in research and development and 19 were in sales, marketing and administration. Among our research staff, 14 hold Ph.D.'s and 25 hold masters' or bachelors' degrees in their respective disciplines. Our technical staff has expertise in the following areas: microbial genetics, bioinformatics, metabolic engineering, systems biology, plant genetic engineering, fermentation process engineering, chemical engineering and polymer science and engineering. Most of our employees are located in Massachusetts. None of our employees are subject to a collective bargaining agreement. We consider our relationship with our employees to be good.

Properties

We do not own any real property. We currently lease approximately 28,000 square feet of office and research and development space at 21 Erie Street, Cambridge, Massachusetts. We have entered into an agreement with the landlord to terminate this lease effective July 31, 2016. On January 20, 2016, we entered into a lease agreement for approximately 30,000 square feet of office and research and development space at 19 Presidential Way, Woburn, Massachusetts. This lease has a term of 10 years and six (6) months beginning on June 1, 2016, subject to adjustment depending on the date that renovations of the premises are substantially completed. We also lease approximately 13,700 square feet of office and laboratory space at 650 Suffolk Street, Lowell, Massachusetts where the majority of our general and administrative employees are located. Our lease for this facility expires in May 2020, with an option to renew for one five-year period. We also have a one-time right to terminate this lease effective May 31, 2017. Our wholly-owned subsidiary, Metabolix Oilseeds, Inc. ("MOI"), located in Saskatoon, Saskatchewan, Canada, leases approximately 2,000 square feet of office, laboratory and greenhouse space. MOI's leases for these facilities expire on March 31, 2016 and July 31, 2016.

Legal Proceedings

From time to time, the Company may be subject to legal proceedings and claims in the ordinary course of business. The Company is not currently aware of any such proceedings or claims that it believes will have, individually or in the aggregate, a material adverse effect on the business, financial condition or the results of operations.

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. We make available on our website, free of charge, copies of our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") as soon as reasonably practicable after filing such material electronically or otherwise furnishing it to the Securities and Exchange Commission (the "SEC").

Investors should note that we announce material information to our investors using our website, SEC filings, press releases, public conference calls and webcasts. We use these channels, as well as social media, to communicate with our shareholders and the public about our Company, our products and other matters. It is possible that the information we post on social media could be deemed to be material information. Therefore, we encourage investors, the media, and others interested in our Company to review the information we post on the social media channels listed at the top of our website.

In addition, the public may read and copy any materials that we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. Also, our filings with the SEC may be accessed through the SEC's website at www.sec.gov.

DIRECTORS AND EXECUTIVE OFFICERS

Please see the sections entitled "Directors and Executive Officers" and "Biographical Information" in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which are incorporated herein by reference.

CORPORATE GOVERNANCE AND BOARD MATTERS

Please see the section entitled "Corporate Governance and Board Matters" in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

EXECUTIVE COMPENSATION

SUMMARY COMPENSATION TABLE

Please see the section entitled “Executive Compensation” in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

Please see the section entitled “Outstanding Equity Awards at Fiscal Year-End” in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

DIRECTOR COMPENSATION

Please see the section entitled “Director Compensation” in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

COMPENSATION COMMITTEE INTERLOCKS AND INSIDER PARTICIPATION

During 2015, Dr. Sinskey, Ms. Mastin, and Mr. Van Nostrand served as members of the Compensation Committee. During 2015, no executive officer of the Company served as: (i) a member of the compensation committee (or other committee of the Board of Directors performing equivalent functions or, in the absence of any such committee, the entire Board of Directors) of another entity, one of whose executive officers served on the Compensation Committee of the Company; (ii) a director of another entity, one of whose executive officers served on the Compensation Committee of the Company; or (iii) a member of the compensation committee (or other committee of the Board of Directors performing equivalent functions or, in the absence of any such committee, the entire Board of Directors) of another entity, one of whose executive officers served as a director of the Company.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

Please see the section entitled “Security Ownership of Certain Beneficial Owners and Management” in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

Please see the section entitled “Securities Authorized for Issuance Under Equity Compensation Plans” in our Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on April 19, 2016, which is incorporated herein by reference.

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

The charter of the Nominating and Corporate Governance Committee provides that the committee shall conduct an appropriate review of all related party transactions (including those required to be disclosed pursuant to Item 404 of Regulation S-K) for potential conflict of interest situations on an ongoing basis, and the approval of that committee shall be required for all such transactions.

Also, under the Company's Code of Business Conduct, any transaction or relationship that reasonably could be expected to give rise to a conflict of interest involving an employee must be reported promptly to the Company's General

Counsel, who has been designated as the Company's Compliance Officer. The Compliance Officer may notify the Board of Directors or a committee thereof as she deems appropriate. Actual or potential conflicts of interest involving a director, executive officer or the Compliance Officer must be disclosed directly to the Chairman of the Board of Directors.

The transactions set forth below were approved by a majority of the Board of Directors, including a majority of the independent and disinterested members of the Board of Directors. The Company believes that it has executed all of the transactions set forth below on terms no less favorable to us than could have been obtained from unaffiliated third parties.

Metabolix has agreements with Tepha, Inc. ("Tepha") a Lexington, Massachusetts based medical device company that licenses Metabolix PHA biopolymer technology for use in certain medical applications. Dr. Sinskey and Dr. Strobeck, members of our Board of Directors, serve on the board of directors of Tepha, Dr. Peoples, Dr. Sinskey, and Dr. Strobeck are stockholders of Tepha, and Metabolix owns 648,149 shares of Tepha's Series A redeemable convertible preferred stock. Under the agreements, Metabolix received royalties on net sales of licensed products, and sublicensing revenues received by Tepha, subject to a minimum payment each year. Metabolix recognized license and royalty revenues of approximately \$578,000 from Tepha for the year ended December 31, 2015.

On May 17, 2016, the Company entered into an amendment (the "Amendment") to its license agreement with Tepha. Under the Amendment Tepha made a \$2.0 million lump sum payment to Metabolix. In exchange, Metabolix agreed to forgo future royalties under its existing license agreements with Tepha. Metabolix also agreed to provide two additional Metabolix production strains to Tepha and granted Tepha a royalty-free license to related intellectual property for use in the production of Tepha's medical devices.

The Company believes that the terms of the agreements with Tepha are no less favorable to us than license agreements that might be entered into with an independent third party.

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 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.

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 have registered 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 “Shares Beneficially Owned After 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(4)
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.
- (4) Based on 27,727,176 shares of common stock outstanding on May 20, 2016.

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

DETERMINATION OF OFFERING PRICE

The selling stockholder may offer and sell the shares of common stock covered by this prospectus at prevailing market prices or privately negotiated prices. See “Plan of Distribution.”

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 May 20, 2016, there were 27,727,176 shares of our common stock outstanding (9,547,380 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 May 20, 2016 and held by non-affiliates, such shares would represent 15.5% of the total common stock outstanding or 34.8% of the non-affiliate shares of common stock outstanding as of May 20, 2016. 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 have registered 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. 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.

On November 9, 2015, the conditions necessary for purchases under the Purchase Agreement to commence were satisfied. 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 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 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 (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 timing and amount of any 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.

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	16.4%
\$ 1.00	\$ 5,093,545	5,093,545	16.4%
\$ 1.50	\$ 7,640,318	5,093,545	16.4%
\$ 2.50	\$ 12,733,863	5,093,545	16.4%
\$ 3.93	\$ 20,000,000	5,093,545	16.4%
\$ 5.00	\$ 20,000,000	4,000,000	13.6%
\$ 7.50	\$ 20,000,000	2,666,667	9.8%
\$ 10.00	\$ 20,000,000	2,000,000	7.7%

(1) Excludes 300,000 Commitment Shares issued under the Purchase Agreement between the Company and Aspire Capital.

- (2) The denominator is based on 27,727,176 shares outstanding as of May 20, 2016, 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.

DESCRIPTION OF CAPITAL STOCK

We are authorized to issue 250,000,000 shares of common stock, par value \$0.01 per share, and 5,000,000 shares of preferred stock, par value \$0.01 per share.

Common Stock

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

Holders of shares of common stock will be entitled to receive dividends if and when declared by the board of directors from funds legally available therefor. The holders of shares of common stock will be entitled to one vote for each share of common stock held of record. Stockholders will have the right to vote for the election of directors. The shares of common stock offered hereby, when issued, will be fully paid and nonassessable.

Preferred Stock

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

Our board of directors is authorized, without action by our stockholders, to designate and issue up to 5,000,000 shares of preferred stock, par value \$0.01 per share, in one or more series. The board of directors can fix the rights, preferences and privileges of the shares of each series and any of its qualifications, limitations or restrictions. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of common stock. The issuance of preferred stock, while providing flexibility in connection with possible future financings, acquisitions and other corporate purposes could, under certain circumstances, have the effect of delaying, deferring or preventing a change in control of us and could adversely affect the market price of our common stock. We do not have any shares of preferred stock outstanding, and we have no current plans to issue any preferred stock.

Transfer Agent and Registrar

We have appointed American Stock Transfer & Trust Company as the transfer agent and registrar for our common stock.

Listing

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

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, 2015, 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 is 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 (the "Exchange Act"), 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, and information that we file after the date hereof with the SEC will automatically update and supersede the information already incorporated by reference. We incorporate by reference the documents listed below, which we have already filed with the SEC, and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, after the date of this prospectus and prior to the termination of this offering:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2015;
- Our Quarterly Reports on Form 10-Q for the fiscal quarters ended June 30, 2015, September 30, 2015 and March 31, 2016;
- Portions of our Proxy Statement filed with the SEC on April 19, 2016 that are deemed "filed" with the SEC;
- 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, October 7, 2015, November 10, 2015, January 26, 2016, March 29, 2016 and May 19, 2016; 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.

Any statement contained in this prospectus or in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

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.

METABOLIX, INC.
Consolidated Financial Statements

Please see our consolidated financial statements under Item 15 in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015, filed with the Securities and Exchange Commission on March 29, 2016 and Item 1 of our Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2016, filed with the Securities and Exchange Commission on May 16, 2016, each of which are incorporated herein by reference.

5,393,545 Shares



Common Stock

PROSPECTUS

June 8, 2016