BioAmber Inc.
Form S-1/A
May 07, 2013
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As filed with the Securities and Exchange Commission on May 7, 2013.

Registration No. 333-177917

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 17

to

FORM S-1

REGISTRATION STATEMENT

UNDER THE SECURITIES ACT OF 1933

BIOAMBER INC.

(Exact Name of Registrant As Specified in Its Charter)

Delaware	**2860**	**98-0601045**
(State or Other Jurisdiction of Incorporation or Organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

1250 Rene Levesque West, Suite 4110	**3850 Annapolis Lane North, Suite 180**
Montreal, Quebec, Canada H3B 4W8	**Plymouth, Minnesota 55447**
Telephone: (514) 844-8000	**Telephone: (763) 253-4480**

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant s Principal Executive Offices)

Jean-François Huc

President and Chief Executive Officer

BioAmber Inc.

1250 Rene Levesque West, Suite 4110

Montreal, Quebec, Canada H3B 4W8

Telephone: (514) 844-8000

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Telephone: (617) 570-1000	

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

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

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

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

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

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

Large Accelerated Filer ¨		Accelerated Filer ¨
Non-Accelerated Filer x	(Do not check if a smaller reporting company)	Smaller Reporting Company ¨

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to Be Registered	**Proposed Maximum Aggregate Offering Price(1)(2)**	**Amount of Registration Fee(3)**
Common Stock, par value $0.01 per share	$ 161,000,000	$ 21,961
Warrants		

(1) Estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(o) under the Securities Act of 1933.
(2) Includes the offering price of additional shares of Common Stock and warrants that the underwriters have an option to purchase.
(3)

An aggregate registration fee of $21,333 was previously paid in connection with the filing of the registration statement and amendments. The amount of the registration fee due hereunder is offset by the $21,333 previously paid, and accordingly $628 will be paid in connection with the filing of this amendment.

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

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

SUBJECT TO COMPLETION. DATED May 7, 2013.

8,000,000 Shares

Common Stock

This is the initial public offering of our common stock. We are selling 8,000,000 shares of common stock and warrants to purchase up to 4,000,000 shares of our common stock (and the shares of common stock issuable from time to time upon exercise of these warrants). Each share of common stock is being sold in combination with a warrant to purchase half of one share of common stock at an exercise price of $11.00 per whole share of common stock. No warrant will be issued in the offering, including in connection with the over-allotment option described below, without an accompanying share of common stock. The shares of common stock and warrants will be issued separately.

Prior to this offering, there has been no public market for our common stock. The initial public offering price of our common stock and warrants is expected to be between $10.00 and $12.00 per combination. Our common stock has been approved for listing on the New York Stock Exchange, where it will trade in U.S. dollars under the symbol BIOA. We also intend to list our common stock on the Professional Segment of NYSE Euronext in Paris under the symbol BIOA. There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange or other nationally recognized trading system.

The underwriters have an option to purchase a maximum of 1,200,000 additional shares of common stock and additional warrants to purchase up to 600,000 shares of common stock from us at the public offering price, less underwriting discounts and commissions, to cover over-allotments, if any.

BioAmber Inc. is an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012.

Investing in our securities involves risks. See Risk Factors on page 12.

	Price to Public	Underwriting Discounts and Commissions(1)	Proceeds to BioAmber
Per Combination	$	$	$
Total	$	$	$

(1) We have agreed to reimburse the underwriters for certain expenses in connection with this offering. See Underwriting.
Delivery of the shares of common stock and warrants will be made on or about , 2013.

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

Credit Suisse

Société Générale

Corporate and Investment Banking

Barclays

Pacific Crest Securities

Prospectus dated , 2013.

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You should rely only on the information contained in this document or to which we have referred you. We have not authorized anyone to provide you with information that is different. This document may only be used where it is legal to sell these securities.

This prospectus contains information concerning our industry and the markets in which we operate, including our general expectations and market position, market opportunity and market share, that is based on information from various sources (including industry publications, surveys and forecasts and our internal research) and on assumptions that we have made which we believe to be reasonable based on that data and other similar sources and on our knowledge of those markets. In most cases, our internal research has not been verified by any independent source. Projections, assumptions and estimates of our future performance and the future performance of the industries in which we operate are necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described in the sections entitled Risk Factors, Cautionary Note Regarding Forward-Looking Statements and elsewhere in this prospectus. These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

We have obtained or filed for trademark protection in the United States and internationally, for the mark BioAmber with and without our logo, and our tag line Chemistry Inspired by Nature in connection with succinic acid, succinic salts and derivatives, dicarboxylic acid, dicarboxylic salts and derivatives. Solely for convenience, the trademarks, trade names and service marks referred to in this prospectus are without the ® and TM symbols, but such references are not intended to indicate, in any way, that the owner thereof will not assert, to the fullest extent under applicable law, such owner s rights to these trademarks, service marks and trade names. This prospectus contains additional trade names, trademarks and service marks of other companies, which, to our knowledge, are the property of their respective owners.

Through and including , 2013 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer s obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

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PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information that you should consider in making your investment decision. Before investing in our securities, you should carefully read this entire prospectus, including our financial statements and the related notes included elsewhere in this prospectus. You should also consider, among other things, the matters described under Risk Factors and Management s Discussion and Analysis of Financial Condition and Results of Operations, in each case appearing elsewhere in this prospectus. Unless otherwise stated, all references to us, our, BioAmber, we, our company, the Company and similar designations in this prospectus refer to BioAmber Inc. and its subsidiaries, and unless the context otherwise requires, all references to capacity refer to annual capacity.

BioAmber Inc.

Overview

We are a next-generation chemicals company. Our proprietary technology platform combines industrial biotechnology and chemical catalysis to convert renewable feedstocks into sustainable chemicals that are cost-competitive replacements for petroleum-derived chemicals. We currently sell our first product, bio-succinic acid, to customers in a variety of chemical markets. We intend to produce bio-succinic acid that is cost-competitive with succinic acid produced from petroleum at our planned facility in Sarnia, Ontario. We currently produce our bio-succinic acid in a large-scale demonstration facility using a 350,000 liter fermenter in Pomacle, France, which we believe to be among the largest bio-based chemical manufacturing facilities in the world. We have produced approximately 1.25 million pounds, or 568 metric tons, of bio-succinic acid at this facility as of December 31, 2012. We sold 144,500 pounds and 356,900 pounds of bio-succinic acid to our customers in the years ended December 31, 2011 and December 31, 2012, respectively.

We have achieved a number of accomplishments through the successful implementation of our proprietary technology platform including:

- a history of large scale fermentation and continuous purification;
- low-cost bio-succinic acid production capability;
- a customer-qualified manufacturing process;
- supply agreements with large and established customers;
- an equity partnership for our first global scale biochemical manufacturing facility; and
- multiple commercial and exclusive technology partnerships.

Succinic acid can be used to manufacture a wide variety of products used every day, including plastics, food additives and personal care products, and can also be used as a building block for a number of derivative chemicals. Today, petroleum-derived succinic acid is not used in many potential applications because of its relatively high production costs and selling price. We believe that our low-cost production capability and our development of next-generation bio-succinic derived products including 1,4 butanediol, or 1,4 BDO, which is used to produce polyesters, plastics, spandex and other products, will provide us with access to a more than $10 billion market opportunity. Combining these opportunities with other building block chemicals we are developing, including adipic acid and caprolactam, which are used in the production of nylons, we believe that our total addressable market is in excess of $30 billion.

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We believe we can produce bio-succinic acid that is cost-competitive with succinic acid produced from oil priced as low as $35 per barrel, based on management s estimates of production costs at our planned facility in Sarnia, Ontario and an assumed corn price of $6.50 per bushel. While we can provide no assurance that we will be able to secure corn at $6.50 per bushel given the fluctuations in corn prices, we believe this assumption is reasonable given the historic price of corn and management s expectations as to their ability to manage the cost of corn and other inputs for our planned facility in Sarnia, Ontario. Over the past five years, the price of corn ranged from a low of $2.68 per bushel to a high of $8.44 per bushel. As of April 1, 2013, the spot price was $6.55 per bushel and the six month forward price was $5.51 per bushel. We estimate that a $1.00 increase or decrease in the per bushel price of corn would result in just a $0.024 per pound change in our variable cost of our bio-succinic acid. We expect the productivity of the organism used in our fermentation process and other on-going process improvements to further reduce our production costs. Our ability to compete on cost is not dependent on government subsidies or tariffs.

We are working to rapidly expand our accessible markets and product portfolio. We have entered into strategic relationships with several leading companies, such as our multi-year agreement with Mitsubishi Chemical Corporation, or Mitsubishi Chemical, for bio-succinic acid. We have also entered into agreements with LANXESS Deutschland GmbH, or Lanxess, Faurecia, S.A., or Faurecia, NatureWorks LLC, or NatureWorks, and others for the development of derivatives of bio-succinic acid.

We have also entered into technology partnerships to lower our production costs, expand our product portfolio and enhance our biochemical production platform. For example, we entered into a technology partnership with Cargill Inc., or Cargill, through which we exclusively license a proprietary yeast organism for use in our fermentation process to produce our products. Throughout this prospectus, we refer to the yeast organism that we have licensed from Cargill as our yeast. We have also established other technology licenses and collaborations, including with E.I. du Pont de Nemours and Company, or DuPont, Evonik Industries AG, or Evonik, Agro-industrie Recherches et Développements, or ARD, Celexion, LLC, or Celexion, and entities funded by the U.S. Department of Energy, or DOE.

Our business strategy is to leverage the value of our technology by building and operating production facilities around the world. However, depending on our access to capital and third-party demand for our technology, we may also enter into technology licenses on an opportunistic basis.

In order to support our growth strategy, we have begun to rapidly expand our manufacturing capacity. We have entered into a joint venture agreement with Mitsui & Co., Ltd., or Mitsui, for our planned facility in Sarnia, Ontario, which has an initial projected capacity of 30,000 metric tons of bio-succinic acid and could subsequently be expanded to produce another 20,000 metric tons of bio-succinic acid. A portion of our aggregate capacity could be further converted to produce bio-based 1,4 BDO. As an example, we estimate that approximately 30,000 metric tons of bio-succinic acid production could be converted into approximately 22,000 metric tons of bio-based 1,4 BDO production. We have commenced engineering and substantially completed permitting for this facility and the initial phase is expected to be mechanically complete in 2014. By mechanically complete, we mean that construction of the facility has been substantially completed such that we can begin commissioning and start-up. We expect this facility will be fully funded through equity contributions by both us, with a portion of the net proceeds from this offering, and Mitsui, as well as a combination of government grants and interest-free loans. As we commission and start-up our planned facility in Sarnia, Ontario, we expect to terminate production of our products at the large-scale demonstration facility in Pomacle, France. Our joint venture with Mitsui also contemplates the potential construction and operation of two additional facilities, which we expect to occur over the next three to four years.

We are committed to managing our economic, social, environmental and ethical performance through continued sustainable business practices. We have recently completed a life cycle analysis for our planned

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facility in Sarnia that indicates that only 0.04 kilograms of carbon dioxide equivalent (or greenhouse gases) will be emitted per kilogram of our bio-succinic acid produced, making our processes essentially carbon neutral. This is significantly less carbon intensive than the current petrochemical process for making succinic acid, in which 7.1 kilograms of carbon dioxide equivalent are emitted per kilogram of succinic acid produced. This represents a 99.4% reduction in greenhouse gases for our bio-succinic acid process, relative to the current petrochemical process for making succinic acid. The life cycle analysis also indicates that our planned facility in Sarnia will consume 56% less energy than the current petrochemical process. The analysis also indicates that field-to-gate energy use will be 42.7 mega joules per kilogram of our bio-succinic acid produced, as compared to the current petrochemical process, which uses 97.7 mega joules per kilogram of succinic acid produced.

We are a development stage company and recognized revenues from the sales of products during the years ended December 31, 2011 and 2012. We incurred net losses of $30.9 million and $39.5 million, respectively, during the years ended December 31, 2011 and 2012. These losses are expected to continue as we further develop our technologies and proprietary processes, build our operating infrastructure, and provide customers with products for testing and verification for their various end uses.

Our Industry

The global chemical industry is a $4.1 trillion market, based on total global chemical shipments in 2012, according to the American Chemistry Council. Chemicals are utilized in a broad range of end-use markets, including heavy industry, mining, construction, consumer goods, textiles and healthcare. While the global chemical industry provides many value-added products to industrial and consumer end-markets, it is facing an increasing number of challenges as a result of its significant reliance on petroleum as its primary feedstock. Consequently, we believe there is significant and growing demand for a low-cost and sustainable alternative to using petroleum for chemical production. In addition, low-cost natural gas in certain geographies has led to a shift from naphtha cracking to natural gas liquid cracking. This in turn led to a 25% reduction between 2007 and 2012 in the U.S. production of crude four-carbon, or C4, chemicals, the primary feedstock for the petrochemicals we are seeking to substitute, contributing to growing demand for alternative sources of C4 chemicals. Multiple biochemical processes have been developed to address this demand, primarily using microorganisms that can convert sugars derived from renewable feedstocks into chemical building blocks. We believe there is a significant opportunity for bio-based chemical manufacturers who can reliably deliver product at scale with the required specifications of potential customers and at a competitive cost.

Our Solution

Our proprietary technology platform combines industrial biotechnology and chemical catalysis to convert renewable feedstocks into chemicals that are cost-competitive replacements for petroleum-derived chemicals. We have delivered high quality bio-succinic acid that meets the specifications of chemical companies, including Mitsui and Mitsubishi Chemical. We believe our solution enables us to address multiple large chemical markets, including polyurethanes, plasticizers, personal care products, de-icing solutions, resins and coatings, food additives and lubricants that are currently being served by petrochemicals by:

- providing value to chemical companies through cost-competitive, renewable chemical alternatives that offer equal or better performance;
- delivering products in quantities, which we believe are in excess of our bio-based competitors, that enable our customers to test and certify our products;
- utilizing our yeast and simplified purification process, which we expect will further drive down facility and production costs and expand the market opportunity;

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mitigating the impact of potential feedstock volatility by using less feedstock per ton of output than most other sugar-based processes for biochemicals other than succinic acid; and

producing significantly lower greenhouse gas emissions than the processes used to manufacture petroleum-based products by sequestering carbon dioxide in the process of producing bio-succinic acid and eliminating the emission of nitrous oxide in the process of producing bio-adipic acid.

Our Strengths

Our business benefits from a number of competitive strengths, including:

Proprietary Technology Platform that Addresses a Large Market Opportunity. We own or have exclusive rights to specific microorganisms, chemical catalysis technology and a scalable and flexible purification process that, when combined and optimized, convert renewable feedstocks into chemically identical replacements for petroleum-derived equivalents. We believe our bio-based chemicals can serve as drop-in replacements for existing petroleum-based chemicals, addressing what we believe to be a more than $30 billion market opportunity.

Selling Commercial Product Today. In the aggregate, we sold 501,400 pounds, or 227 metric tons, of our bio-succinic acid to 19 customers in 2011 and 2012. We shipped commercial quantities to these customers, such as shipments of one ton super sacks and container loads. We believe we were the first company selling bio-succinic acid in commercial quantities.

Cost-Competitive Economics at Large Scale. Our experience operating the large-scale demonstration facility in Pomacle, France for over three years with a 350,000 liter fermenter has helped us refine our process and ability to cost-competitively make bio-succinic acid without subsidies. We have incorporated numerous lessons learned and improvements gained from operating the facility in France into our engineering design for our planned manufacturing facility in Sarnia, Ontario. We expect to produce bio-succinic acid at our planned facility in Sarnia that is cost-competitive with succinic acid produced from oil priced as low as $35 per barrel.

Limited Exposure to the Availability and Price of Sugar. Our process requires less sugar than most other renewable products because 25% of the carbon in our bio-succinic acid originates from carbon dioxide as opposed to sugar. This makes our process less vulnerable to sugar price increases relative to other bio-based processes. In addition, our projected demand for sugar is a small fraction of the existing capacity in the markets in which we plan to operate. Given our modest demand, rapid growth in our production capacity would not likely have a material impact on the price of sugar in any of our markets.

Established, Diverse Customer Base. Our leadership in bio-succinic acid technology, our product quality and the economics of our process are validated by the contracts we have signed with customers in a variety of end-markets. We have entered into supply agreements for the sale of approximately 144,000 metric tons of bio-succinic acid and its derivatives over the next five years. These supply agreements obligate our customers, subject to certain conditions, to purchase 75% to 100% of their succinic acid needs from us, contingent on our ability to meet their price and other requirements. There are no penalties in the event these customers do not purchase or we do not supply them with bio-succinic acid in the projected purchase volumes indicated in the agreements.

Global Manufacturing Expansion Plan. We have signed a joint venture agreement with Mitsui to build our planned facility in Sarnia, Ontario, that will have a projected capacity of 30,000 metric tons of bio-succinic acid and could subsequently be expanded to produce another 20,000 metric tons of bio-succinic acid. Our agreement with Mitsui also contemplates the potential construction and operation of two additional manufacturing facilities, which we expect to occur over the next three to four years.

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Experienced Management Team with Strong Track Record. Our management team consists of experienced professionals, possessing on average over 25 years of relevant experience in scaling up, manufacturing and commercializing chemicals, gained at both large companies and entrepreneurial start-ups. Members of our management team have worked at companies including Cargill, DuPont, INVISTA, Dow Corning Corporation, Royal DSM N.V., Sanofi and the Genencor division of Danisco A/S.

Our Strategy

Our goal is to be the leading provider of renewable chemicals by replacing petroleum-based chemicals with our bio-based alternatives, which we believe could revolutionize the global chemical industry. We intend to:

Rapidly Expand Our Global Manufacturing Capacity. As demand for our products grows, we intend to construct manufacturing facilities in multiple geographic regions employing a design that facilitates expedient and capital-efficient growth. We intend to retain operational control and a majority interest in these facilities and collaborate with third parties to obtain capital, construct the facilities, secure feedstock, sell future output and assist with manufacturing and market access.

Target the Large and Established 1,4 BDO Market. We are developing high-volume, high value-added bio-succinic acid derivatives such as bio-based 1,4 BDO, which are used in the production of polyesters, plastics, spandex and other products. We have entered into a joint venture agreement with Mitsui to manufacture, market and sell bio-based 1,4 BDO and leverage Mitsui s strength as a leading distributor of chemicals to target what we believe is the approximately $4.3 billion market for 1,4 BDO with our drop-in bio-based alternative.

Develop Next-Generation Succinic-Derived Products. We intend to leverage our proprietary technology platform and expertise in the production of bio-succinic acid to target additional high value-added products, such as bioplastics and plasticizers. We expect that these high value-added chemicals will offer better performance than the petroleum-derived products that they seek to replace.

Continue to Reduce the Cost of Our Products. Our goal is to be the low-cost producer of the bio-based chemicals we manufacture, which we expect will drive market acceptance of our products across several applications. We believe we have inherent advantages in our proprietary production process and we intend to further reduce our production costs by switching from our *E. coli* organism to our yeast, increasing the scale of our manufacturing process and introducing new proprietary technologies.

Expand Product Platform to Additional Building Block Chemicals. We intend to leverage our flexible technology platform and extensive experience developing, producing and marketing bio-succinic acid to expand our product base to additional building block chemicals, including adipic acid and caprolactam. These products are used in the production of carpeting, rugs, textile laminations, garment linings, adhesives for shoe soles and resins used in the paper products industry.

Industry Awards

In June 2011, we were awarded the Presidential Green Chemistry Award for small business innovation, presented by the Environmental Protection Agency and American Chemical Society for being the first company to successfully develop and commercialize a bio-based chemical that directly substitutes its petroleum-derived equivalent and offers a better environmental footprint. In October 2011, we were awarded the ICIS Innovation Award, winning the Best Business Innovation category for the development and commercialization of our bio-succinic acid platform. We are only the second company that has been awarded the prestigious ICIS Innovation Award and the Presidential Green Chemistry Challenge Award in the same year. In May 2012, we were awarded BIOTECanada s Gold Leaf Award, winning Early Stage Company of the Year for Industrial Biotechnology.

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Risk Factors

Our business is subject to many risks and uncertainties, as more fully described under Risk Factors in this prospectus, of which you should be aware before investing in our common stock and warrants. For example:

- We have a limited operating history, a history of losses, anticipate continuing to incur losses for a period of time, and may never achieve or sustain profitability.
- To achieve profitability, we need to execute our manufacturing expansion strategy, including the construction of our planned facility in Sarnia, Ontario.
- The funding, construction and operation of our future facilities involve significant risks.
- Our failure to comply with milestone covenants contained in certain of our agreements, including certain debt instruments, government grants and government loans, could result in events of default, and if not cured, would require their accelerated or immediate repayment, in which case our assets and cash flow may be insufficient to make such repayments or fund our manufacturing expansion strategy.
- Our independent registered chartered professional accountants have expressed substantial doubt about our ability to continue as a going concern.
- We have generated only limited sales of bio-succinic acid to date, are dependent on a limited number of customers and face challenges to developing our business.
- We may not obtain the additional financing we need in order to grow our business, develop or enhance our products or respond to competitive pressures.
- Our prior success in developing bio-succinic acid may not be indicative of our ability to leverage our bio-succinic acid technology to develop and commercialize derivatives of bio-succinic acid and other bio-based building block chemicals.
- Demand for our bio-succinic acid, bio-based 1,4 BDO and other bio-succinic acid derivatives may take longer to develop or be reduced by technological innovations in our industry that allow our competitors to produce them at a lower cost.
- Changes we make to our business model, product development and manufacturing process, or changes to our commercial partnerships and collaborations may not yield the benefits we expect and may have adverse impacts that we did not anticipate.
- We are dependent on our relationships with strategic partners, licensors, collaborators and other third parties for research and development, the funding, construction and operation of our manufacturing facilities and the commercialization of our products. The failure to manage these relationships could delay or prevent us from developing and commercializing our products.

Our process currently uses an *E. coli* organism, which is a type of bacteria and therefore has certain inherent disadvantages compared to other organisms. We will continue to be subject to these disadvantages while we are transitioning from *E. coli* to our yeast.

Our operations are dependent upon certain raw materials and utilities, principally sugars, carbon dioxide, hydrogen, steam and electricity, which make us vulnerable to supply availability and price fluctuations.

Our inability to adequately protect, or any loss of our intellectual property rights, could materially adversely affect our business, financial condition and results of operations.

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

Holders of our warrants will have no rights as a common stockholder until such holders exercise their warrants and acquire our common stock.

The warrants in this offering may not have any value.

Our common stock has been approved for listing on the New York Stock Exchange in connection with this offering. We also intend to list our common stock on the Professional Segment of NYSE Euronext in Paris, or NYSE Euronext Paris under the symbol BIOA. You should carefully review the risks associated with this offering, our common stock, and the listing and trading of our common stock on NYSE Euronext Paris in the section entitled Risk Factors before investing in our common stock.

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Our Corporate Information

We were incorporated in the state of Delaware on October 15, 2008 as DNP Green Technology, Inc. The core of our bio-succinic acid platform technology was developed by entities funded by the DOE in the late 1990s, as part of its Alternative Feedstocks Program, and is under exclusive license to us. Prior to our incorporation, the bio-succinic acid technology was licensed to Diversified Natural Products, Inc., or DNP. The technology was assigned to us as part of an asset spin-off transaction in 2008 and 2009 in which certain assets of DNP were assigned to BioAmber Inc. in exchange for shares of BioAmber Inc. These assets included DNP s share in Bioamber S.A.S., a joint venture with ARD, the purpose of which was to research bio-succinic acid and processes to produce bio-succinic acid. In 2010, we acquired 100% of our joint venture with ARD and changed our name to BioAmber Inc. In 2010, we also acquired 75% of Sinoven BioPolymers Inc, or Sinoven, our wholly-owned subsidiary with proprietary technology for modifying PBS, and acquired the remaining 25% interest in 2011. In 2011, we created a wholly-owned Luxembourg entity, BioAmber International, S.à.r.l., to hold certain intellectual property assets and BioAmber Sarnia Inc. (f/k/a Bluewater BioChemicals Inc.), or BioAmber Sarnia, a joint venture with Mitsui through which we will fund our planned facility in Sarnia, Ontario. We retain 70% ownership of the BioAmber Sarnia joint venture. In 2012, we entered into a series of agreements with NatureWorks to create AmberWorks, a joint venture in which we have a 50% ownership interest. The following charts show our corporate structure after the asset spin-off transaction and our current corporate structure:

Our principal executive offices are located at 3850 Annapolis Lane North, Suite 180, Plymouth, Minnesota, United States of America, 55447 and at 1250 Rene Levesque West, Suite 4110, Montreal, Quebec, Canada H3B 4W8. Our telephone number in the United States is (763) 253-4480 and our telephone number in Canada is (514) 844-8000. Our website address is *www.bio-amber.com*. We do not incorporate the information on or accessible through our website into this prospectus, and you should not consider any information on, or that can be accessed through, our website as part of this prospectus.

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The Offering

Common stock offered by us	8,000,000 shares. Each share of common stock is being sold in combination with a warrant to purchase half of one share of common stock at an exercise price of $11.00 per whole share of common stock.
Warrants offered by us	Each share of common stock is being sold together with a warrant to purchase half of one share of common stock. As a result, we are offering warrants to purchase up to 4,000,000 shares of common stock, which will be exercisable during the period commencing on the date of original issuance and ending on September 30, 2016 at an exercise price of $11.00 per whole share of common stock. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants. There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange or other nationally recognized trading system.
Common stock to be outstanding after this offering	18,412,815 shares.
Option to purchase additional shares and warrants	The underwriters have an option to purchase a maximum of 1,200,000 additional shares of common stock and additional warrants to purchase up to 600,000 shares of common stock from us. The underwriters can exercise this option at any time within 30 days from the date of this prospectus.
Use of proceeds	We intend to use the net proceeds from this offering, together with existing cash resources and borrowings under our proposed credit facility with Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, to construct the initial phase of our planned facility in Sarnia, Ontario and for working capital and other general corporate purposes, including certain interest and principal payments as they come due under the proposed credit facility with HTGC. See the section entitled Use of Proceeds.
Listing	Our common stock has been approved for listing on the New York Stock Exchange, where it will trade in U.S. dollars under the symbol BIOA. We also intend to list our common stock on the Professional Segment of NYSE Euronext in Paris under the symbol BIOA. See the section entitled Description of Securities Listing for additional information about the listing of our common stock. We do not intend to apply for listing of the warrants on any national securities exchange or other nationally recognized trading system.
Risk factors	You should read carefully the section entitled Risk Factors in this prospectus for a discussion of factors that you should consider before deciding to invest in shares of our common stock and warrants.

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The number of shares of our common stock to be outstanding after this offering is based on 10,412,815 shares of our common stock outstanding as of December 31, 2012, which gives effect to the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders (see note 23 to our consolidated financial statements), and excludes:

- 2,072,000 shares of our common stock issuable upon exercise of outstanding stock options as of December 31, 2012 at a weighted average exercise price of $10.89 per share;
- 1,457,855 shares of common stock issuable upon the exercise of outstanding warrants as of December 31, 2012 at a weighted average exercise price of $2.70 per share;
- 49,000 shares of our common stock reserved as of December 31, 2012 for future issuance under our 2008 Stock Incentive Plan;
- 3,682,563 shares of our common stock reserved for future issuance under our 2013 Stock Option and Incentive Plan, which will become effective upon the completion of this offering, as more fully described in Executive and Director Compensation 2013 Stock Option and Incentive Plan; and
- 4,000,000 shares of common stock issuable upon the exercise of the warrants to be sold in this offering.

Except as otherwise indicated, all information in this prospectus is as of December 31, 2012 and reflects or assumes:

- the filing of our amended and restated certificate of incorporation and the adoption of our amended and restated by-laws, which will occur in connection with the consummation of the offering;
- a 35-for-1 forward stock split of our outstanding common stock which became effective on May 2, 2013; and
- no exercise by the underwriters of their option to purchase up to an additional 1,200,000 shares of our common stock and additional warrants to purchase up to 600,000 shares of common stock from us in this offering.

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SUMMARY CONSOLIDATED FINANCIAL DATA

The following table presents our summary consolidated financial data for the periods indicated. In 2010, we changed our fiscal year end from June 30 to December 31. The consolidated statements of operations data for the year ended June 30, 2010, the six months ended December 31, 2010 and the years ended December 31, 2011 and 2012 are derived from our audited consolidated financial statements that are included elsewhere in this prospectus.

Historical results are not necessarily indicative of the results for future periods and results of interim periods are not necessarily indicative of results for the entire year. You should read this summary consolidated financial data in conjunction with the sections entitled Our Corporate Information, Selected Consolidated Financial Data, and Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and the related notes included elsewhere in this prospectus.

Consolidated statement of operations data:

	12 months ended June 30, 2010	6 months ended December 31, 2010	12 months ended December 31, 2011	12 months ended December 31, 2012
	(in thousands, except share and per share data)			
Revenues				
Licensing revenue from related parties(1)	$ 966	$ 75	$	$
Product sales			560	2,291
Total revenues	966	75	560	2,291
Cost of goods sold			837	1,746
Gross profit (loss)	966	75	(277)	545
Operating expenses				
General and administrative	1,543	1,590	6,776	11,665
Research and development, net(2)	1,458	4,841	16,717	20,417
Sales and marketing	59	103	2,471	4,193
Depreciation of property and equipment and amortization of intangible assets	484	264	522	2,116
Impairment loss and write-off of intangible assets				1,213
Foreign exchange (gain) loss	121	(26)	99	50
Operating expenses	3,665	6,772	26,585	39,654
Operating loss	2,699	6,697	26,862	39,109
Amortization of deferred financing costs and debt discounts	157	2	12	100
Financial charges(3)	962	155	3,870	
Interest revenue from related parties	(89)	(73)		
Income taxes			108	55
Equity participation in losses of equity method investments(4)	4,340	1,548		274
Gain on re-measurement of Bioamber S.A.S.(4)		(6,216)		
Net loss	$ 8,069	$ 2,113	$ 30,852	$ 39,538
Net loss attributable to:				
BioAmber Inc. shareholders	$ 7,992	$ 2,011	$ 30,621	$ 39,351
Non-controlling interest	77	102	231	187
	$ 8,069	$ 2,113	$ 30,852	$ 39,538

Net loss per share attributable to BioAmber Inc. shareholders basic(5)	$ 2.75	$ 0.45	$ 3.89	$ 3.82
Weighted-average of common shares outstanding basic	2,905,876	4,497,258	7,864,371	10,296,633

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(1) Consists of licensing fees charged to Bioamber S.A.S. prior to our acquisition of control of Bioamber S.A.S. effective October 1, 2010.
(2) Research and development expenses include some costs of production related to product development and are net of research and development tax credits.
(3) Financial charges consist primarily of accreted interest on convertible notes we issued in June 2009 and November 2010 and which were subsequently converted to shares of common stock. Financial charges also include the recording of the increases in fair value of contingent consideration in connection with the acquisition of Sinoven and held in escrow until September 30, 2011. This escrow was modified on October 1, 2011 when we acquired the remaining 25% of Sinoven and on March 1, 2013 pursuant to entering into a Termination and Release Agreement.
(4) Until October 1, 2010, when we took control of Bioamber S.A.S., we recorded our share of Bioamber S.A.S. s losses in excess of the investment s book value. Upon completion of our acquisition of Bioamber S.A.S., the 50% held equity interest, net of long-term accounts receivable from Bioamber S.A.S., was re-measured to its estimated fair value resulting in a gain of $6,216,000 in the six months ended December 31, 2010. See note 4 to our consolidated financial statements included elsewhere in this prospectus.
(5) We have incurred losses in each period since inception; accordingly, diluted loss per share is not presented.

Consolidated balance sheet data:

	As of December 31, 2012	
	Actual	Adjusted(1)
	(in thousands)	
Cash (2)	$ 25,072	$ 104,272
Working capital (2)	22,162	101,362
Total assets	50,004	129,204
Long-term debt, including current portion (2)	2,600	2,600
Warrants (financial liability)		14,061
Total liabilities (2)	12,206	26,267
Warrants (equity)	3,075	3,075
Accumulated deficit	(81,826)	(82,698)
Shareholders equity	37,798	102,937

(1) The adjusted balance sheet data gives effect to the issuance and sale of the shares of our common stock and warrants in this offering (assuming an initial public offering price of $11.00 per combination which is the mid-point of the price range set forth on the cover page of this prospectus, and after underwriting discounts and commissions and our expected offering expenses) and the receipt of the net proceeds from this offering.
(2) We expect to enter into a proposed credit facility with Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, subsequent to the closing of this offering pursuant to which HTGC is expected to make available to us term loans in an aggregate principal amount of up to $25.0 million. The terms and conditions of this proposed credit facility are described in detail in Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources. Following the receipt of these funds from HTGC, the amounts set forth in this table for cash, working capital, long-term debt, including current portion, and total liabilities would each increase by $25.0 million.

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RISK FACTORS

Investing in our common stock and warrants involves a high degree of risk. You should carefully consider the following risks and uncertainties, together with all other information in this prospectus, including our consolidated financial statements and related notes, before investing in our common stock and warrants. Any of the risk factors we describe below could adversely affect our business, financial condition or results of operations. The market price of our common stock could decline if one or more of these risks or uncertainties actually occurs, causing you to lose all or part of your investment. Certain statements below are forward-looking statements. See the section entitled Cautionary Note Regarding Forward-Looking Statements.

Risks Related to Our Business and Our Industry

We have a limited operating history, a history of losses, anticipate continuing to incur losses for a period of time, and may never achieve or sustain profitability.

We are a development stage company that has only been in existence since October 2008 and, therefore, we have a limited operating history upon which you can base your evaluation of our business. As a result, any assessments of our current business and predictions you make about our future success or viability may not be as accurate as they could have been if we had a longer operating history. Since our inception, we have incurred substantial net losses, including net losses of $1.9 million from October 15, 2008 through June 30, 2009, $8.1 million for the year ended June 30, 2010, $2.1 million for the six months ended December 31, 2010, $30.9 million for the year ended December 31, 2011 and $39.5 million for the year ended December 31, 2012. We expect these losses to continue. As of December 31, 2012, we had an accumulated deficit of $81.8 million. We expect to continue to incur substantial costs and expenses related to the continued development and expansion of our business, including those related to the development, continuation and operation of our additional manufacturing facilities, research, testing and development of new products and the growth of our sales and marketing efforts. We will need to generate and sustain increased revenues in future periods in order to become profitable. We cannot assure you that we will ever achieve or sustain profitability on a quarterly or annual basis.

To achieve profitability, we need to execute our manufacturing expansion strategy, including the construction of our planned facility in Sarnia, Ontario.

We intend to build our first facility in cooperation with Mitsui in Sarnia, Ontario. We expect this facility to be mechanically complete in 2014, at which time we plan to begin commissioning and start-up. We also intend to build two additional facilities over the next three to four years. We have not yet constructed or operated a commercial-scale production facility, and our technology may not perform as expected when applied at the scale that we plan or we may encounter operational challenges for which we are unable to devise a workable solution. We can provide no assurance that our planned facility in Sarnia, Ontario will be completed on the schedule or within the budget that we intend, or at all. If the construction of our Sarnia facility takes longer than expected, or if we encounter unforeseen issues during construction, testing and operation, we will not be able to sell cost-competitive products within the timeline that we expect, or at all. We currently produce our products at a large-scale demonstration facility in France, which was constructed by ARD. We expect to terminate production at the French facility once we have completed construction of our planned Sarnia facility. Under our agreement with ARD, we have exclusive use of the facility until June 30, 2013, after which we will have access to only 60% of the facility s capacity, which we estimate to be adequate to meet expected customer demand and inventory accumulation during the time period when we are transitioning to our planned Sarnia facility. To the extent customer demand is greater than expected or our transition takes longer than expected, we may not be able to meet the demands of our customers and our customer relationships and commercialization growth may suffer.

Even if we successfully fund, construct and design our planned facility in Sarnia, Ontario, there is no guarantee that this facility will produce at full capacity, and even if we do meet these goals, we may encounter operational challenges for which we are unable to devise a workable solution or which may result in additional costs. In

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addition, our technology may not perform as expected when applied at our planned scale and any resulting adjustments to our process may result in additional costs or otherwise adversely affect our business and results of operations. To date, we have entered into agreements that contemplate, but do not obligate, us to supply approximately 144,000 metric tons of bio-succinic acid, and we are actively seeking to enter into additional supply agreements. These supply agreements obligate our customers to exclusively fulfill their needs for bio-succinic acid from us, contingent on our ability to meet their price and other requirements, however there are no penalties in the event they do not purchase or we do not supply them with bio-succinic acid in the projected purchase volumes they have indicated in the agreements. Without increasing our production capacity by completing our Sarnia and other future facilities, we will not be able to produce sufficient amounts of bio-succinic acid to deliver the full amounts contemplated by these agreements and execute on our growth strategy.

The funding, construction and operation of our future facilities involve significant risks.

We have limited experience constructing a manufacturing facility of the type and size required to produce commercial quantities of chemicals, and doing so is a complex and lengthy undertaking that requires sophisticated, multi-disciplinary planning and precise execution. The funding, construction and operation of manufacturing facilities are subject to a number of risks, any of which could prevent us from executing on our expansion strategy. In particular, the construction costs associated with future facilities may materially exceed budgeted amounts, which could adversely affect our results of operations and financial condition. We estimate the initial phase of the Sarnia, Ontario plant will cost approximately $125.0 million, and will be mechanically completed in 2014. However, we may suffer construction delays or cost overruns, which may be significant, as a result of a variety of factors, such as labor and material shortages, defects in materials and workmanship, adverse weather conditions, transportation constraints, construction change orders, site changes, labor issues and other unforeseen difficulties, any of which could delay or prevent the completion of our planned facilities. As a result, we may not be able to expand our production capacity and product portfolio as quickly as we planned. While our goal is to negotiate contracts with engineering, procurement and construction firms that minimize risk, any delays or cost overruns we encounter may result in the renegotiation of our construction contracts, which could increase our costs.

Assuming we close our proposed credit facility with Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, in the event that the initial phase of our planned facility in Sarnia, Ontario is not mechanically complete on or before December 31, 2014, we expect that we would be in default under our proposed credit agreement with HTGC, which may require repayment of the borrowed amounts and have a material and adverse impact our ability to fund our manufacturing strategy.

In addition, the construction of our facilities may be subject to the receipt of approvals and permits from various regulatory agencies. Such agencies may not approve the projects in a timely manner or may impose restrictions or conditions on a production facility that could potentially prevent construction from proceeding, lengthen its expected completion schedule and/or increase its anticipated cost. If construction costs, or the costs of operating and maintaining our manufacturing facilities, are higher than we anticipate, we may be unable to achieve our expected investment return, which could adversely affect our business and results of operations.

We may also encounter new design and engineering or operational challenges as we seek to expand the range of organisms and feedstocks we use. Any design and engineering or operational issues at our future facilities may result in diminished production capacity, increased costs of operations or periods in which our facilities are non-operational, all of which could harm our business, financial condition and results of operations. We intend to obtain and maintain insurance to protect against some of the risks relating to the construction of new projects. However, such insurance may not be available or adequate to cover lost revenues or increased costs if we experience construction problems, cost overruns or delays. If we are unable to address these risks in a satisfactory and timely manner, we may not be able to implement our expansion strategy as planned or at all. In addition, in the event that our products are defective or have manufacturing failures, we may have to write off and incur other charges and expenses for products that fail to meet internal or external specifications. We also may have to write off work-in-process materials and incur other charges and expenses associated with contamination and impurities should they occur.

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Our failure to comply with milestone covenants contained in certain of our agreements, including certain debt instruments, government grants and government loans, could result in events of default, and if not cured, would require their accelerated or immediate repayment, in which case our assets and cash flow may be insufficient to make such repayments or fund our manufacturing expansion strategy.

The terms of our debt instruments require us to comply with various milestone covenants related to the construction and start-up of our planned facility in Sarnia, Ontario. A breach of any of these covenants could result in an event of default under one or more of these debt instruments which, if not cured or waived, could give the holders of the defaulted indebtedness the right to terminate commitments to lend and cause all amounts outstanding with respect to the indebtedness to be due and payable immediately. In addition, we are party to certain agreements with governmental entities that provide grants and loans in connection with the construction of our planned Sarnia facility. If we fail to meet any of the milestones and project goals contained in these grant and loan agreements, we may not receive additional grant installments, may be forced to repay grants received or the repayment of the loans may be accelerated. If additional government grant amounts are withheld or if we are forced to repay amounts under our government loans, our assets and cash flow may be insufficient to make such repayments or fund our manufacturing expansion strategy.

Our independent registered chartered professional accountants have expressed substantial doubt about our ability to continue as a going concern.

We are a development stage company and have incurred losses since our inception and have not yet been able to establish a profitable operating company. Because of our recurring operating losses, negative cash flows from operating and investing activities and the uncertainty of efforts to raise additional capital and the ability to execute on our plans, our independent registered chartered professional accountants have expressed substantial doubt as to our ability to continue as a going concern. We plan to address these significant uncertainties by raising additional equity capital through this offering. If we are unable to continue our business, our shares of common stock may have little or no value.

We have generated only limited sales of bio-succinic acid to date, are dependent on a limited number of customers and face challenges to developing our business.

In the aggregate, we only derived revenue from sales of approximately 501,400 pounds of bio-succinic acid to 19 customers in 2011 and 2012. These sales were made in connection with our product and market development efforts and we have not made sales of any other products. In order to generate sales of our bio-succinic acid and our future products, we must be able to reduce our production costs and produce sufficient quantities of our products, both of which are dependent on our ability to build commercial-scale manufacturing operations. If we are not successful in constructing and operating planned manufacturing facilities or otherwise increasing our manufacturing capacity, developing products that meet our customers specifications and further advancing our existing commercial arrangements with strategic partners, we will be unable to generate meaningful revenue from the sale of our products. In addition, we depend, and expect to continue to depend, on a limited number of customers for sales of our bio-succinic acid. During the years ended December 31, 2011 and 2012, 81% and 63%, respectively, of our sales of bio-succinic acid were to Mitsubishi Chemical and International Flavor and Fragrances, Inc., or IFF, and the annual volumes of bio-succinic acid sold to these companies in 2011 and 2012 were 61% and 38% of our total volumes, respectively. In the future, a small number of customers may continue to represent a significant portion of our total revenue in any given period. We cannot be certain that such customers will consistently purchase our products at any particular rate over any subsequent period. A loss of, or any credit issues related to, any of these customers could adversely affect our financial performance.

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We may not obtain the additional financing we need in order to grow our business, develop or enhance our products or respond to competitive pressures.

We will need to raise additional funds in the future in order to grow our business. Any required additional financing may not be available on terms acceptable to us, or at all. Our ability to secure financing and the cost of raising such capital are dependent on numerous factors, including general economic and capital markets conditions, credit availability from lenders, investor confidence and the existence of regulatory and tax incentives that are conducive to raising capital. Current turmoil and uncertainty in the financial markets has caused banks and financial institutions to decrease the amount of capital available for lending and has significantly increased the risk premium of such borrowings. In addition, such turmoil and uncertainty has significantly limited the ability of companies to raise funds through the sale of equity or debt securities. If we are unable to raise additional funds, obtain capital on acceptable terms, secure government grants or co-sponsorships for some of our projects or take advantage of federal and state incentive programs to secure favorable financing, we may have to delay, modify or abandon some or all of our expansion strategies.

The amount of any indebtedness that we may raise in the future may be substantial, and we may be required to secure such indebtedness with our assets and may have substantial interest expenses. If we default on any future secured indebtedness, our lenders may foreclose on the facilities securing such indebtedness. The incurrence of indebtedness could require us to meet financial and operating covenants, which could place limits on our operations and ability to raise additional capital, decrease our liquidity and increase the amount of cash flow required to service our debt. If we experience construction problems, cost overruns or delays that adversely affect our ability to generate revenues, we may not be able to fund principal or interest payments under any debt that we may incur.

We intend to enter into a proposed credit facility with Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, subsequent to the closing of this offering, pursuant to which HTGC is expected to make available to us term loans in an aggregate principal amount of up to $25.0 million. The terms and conditions of this proposed credit facility are described in detail in Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources. Based on our current operating plan, we anticipate that the net proceeds of this offering, together with our existing cash, cash equivalents and any borrowing capacity under the proposed credit facility, will be sufficient to enable us to maintain our currently planned operations, including the funding of the construction of our planned facility in Sarnia, Ontario. Other than the proposed credit facility, we have no committed external sources of funds. Additional financing may not be available when we need it or may not be available on terms that are favorable to us. In addition, we may seek additional capital due to favorable market conditions or strategic considerations, even if we believe we have sufficient funds for our current or future operating plans. If adequate funds are not available to us on a timely basis, or at all, we may be required to halt construction or delay capital expenditures on our planned facility in Sarnia, Ontario, and reduce or delay operating expenses as deemed appropriate in order to conserve cash.

Any effort to sell debt or equity securities may not be successful or may not raise sufficient funds to finance additional facilities. The issuance of additional equity securities could result in dilution to our existing stockholders, including investors in this offering, and the newly-issued securities may have rights senior to those of the holders of our common stock. If additional financing is not available when required or is not available on acceptable terms, we may need to delay, modify or abandon our expansion strategy and we may be unable to take advantage of business opportunities or respond to competitive pressures, which could have a material adverse effect on our offerings, revenue, results of operations and financial condition.

Our prior success in developing bio-succinic acid may not be indicative of our ability to leverage our bio-succinic acid technology to develop and commercialize derivatives of bio-succinic acid and other bio-based building block chemicals.

The success we have had in manufacturing bio-succinic acid using our four carbon, or C4, platform to date may not be indicative of our future ability to develop and commercialize derivatives of bio-succinic acid, and

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bio-based six carbon, or C6, building block chemicals. Although we expect to be able to leverage our bio-succinic acid technology for use in higher value-added products, we have never produced derivatives of bio-succinic acid or bio-based C6 building block chemicals at commercial scale. We may find that the new chemicals that we produce using our processes are more complex than we anticipated or require processes that we are unfamiliar with or which require larger scale development facilities than expected. The development of new products has required, and will require, that we expend significant financial and management resources. We have incurred, and expect to continue to incur, significant research and development expenses. If we are unable to devote adequate resources to develop new products or cannot otherwise successfully develop new products or enhancements that meet customer requirements on a timely basis, our products could lose market share, our revenues and/or margins could decline and we could experience operating losses. Although our management team has significant experience with industrial biotechnology, purification processes and chemical catalysis, the skills and knowledge gained in these fields and in the large-scale production of bio-succinic acid does not guarantee that we will be successful in our efforts to cost-effectively produce and commercialize bio-succinic acid derivatives or bio-based C6 building block chemicals at commercial scale.

In addition, each of the chemicals that we plan to manufacture are used in multiple and diverse end-markets and applications, each of which present unique requirements, pricing pressures and competitors. As a result, we may not be able to sufficiently serve each end-market adequately. In order to effectively compete in the chemicals industry, we will need to, among other things, be able to adapt our development and production processes to meet the rapidly changing demands of the industry and our customers and ensure that the quality, performance attributes and cost of our bio-based products compare favorably to their petroleum-derived equivalents. In each end-market, there may also be barriers to entry due to third-party intellectual property rights or difficulties forming and maintaining strategic partnerships. In addition, the products currently derived from our processes and the feedstocks we use in the production of bio-succinic acid and our future products, may not be applicable to or compatible with demands in existing or future markets. We may not be able to identify new opportunities as they arise since future applications of any given product may not be readily determinable.

If we are not able to successfully develop, commercialize, produce and sell new products, we may be unable to expand our business. Consequently, we may not succeed in our strategy to expand our product platform as expected or at all. If our ability to expand our product platform is significantly delayed or if we are unable to leverage our bio-succinic acid platform as expected, our business and financial condition could be materially and adversely affected.

Demand for our bio-succinic acid, bio-based 1,4 BDO and other bio-succinic acid derivatives may take longer to develop or be reduced by technological innovations in our industry that allow our competitors to produce them at a lower cost.

The development of sufficient customer demand for bio-succinic acid, bio-based 1,4 BDO and other bio-succinic acid derivatives will be affected by the cost competitiveness of our products, and the emergence of more competitive products. The market for bio-based chemicals will require most potential customers to switch from their existing petroleum-based chemical suppliers. In addition, there has been intense growth and interest in bio-based chemicals, and these industries are subject to rapid technological change and product innovation. Our products are based on our proprietary fermentation and purification process, but a number of companies are pursuing alternative processes and technologies and our success will depend on our ability to maintain a competitive position with respect to technological advances. It is possible that those advances could make bio-succinic acid, bio-based 1,4 BDO and other bio-succinic acid derivatives less efficient or obsolete, causing the renewable chemicals we produce to be of a lesser quality than competing bio-based chemicals or causing the yield of our products to be lower than that for competing technologies. These advances could also allow our competitors to produce bio-based chemicals at a lower cost than ours. We cannot predict when new technologies may become available, the rate of acceptance of new technologies by our competitors or the costs associated with such new technologies.

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Technological breakthroughs in our industry or innovations in alternative sources of bio-based chemicals could reduce demand for our products. Our technologies and products may be rendered uneconomical by technological advances, more efficient and cost-effective biocatalysts or entirely different approaches developed by one or more of our competitors. If we are unable to adopt or incorporate technological advances or adapt our products to be competitive with new technologies, our costs could be significantly higher than those of our competitors, which could make our facilities and technology less competitive or uncompetitive.

Changes we make to our business model, product development and manufacturing process, or changes to our commercial partnerships and collaborations may not yield the benefits we expect and may have adverse impacts that we did not anticipate.

We are continually working to lower our operating costs, improve our product performance, increase our speed to market and access new markets. As a result, we have made and will continue to make changes we believe will accomplish these goals. For example, we are in the process of transitioning from an *E. coli* organism to our yeast. In addition, we have expanded the breadth of products we are seeking to commercialize, and entered into a number of early stage partnerships and collaborations related to those products, that we believe will significantly increase our accessible market. We can give no assurances that these and other changes we make will yield the benefits we expect and will not have adverse impacts that we did not anticipate. If these changes are not successful, we may incur additional costs, experience reputational and competitive harm and our business, financial condition and results of operations may be materially and adversely affected.

We are dependent on our relationships with strategic partners, licensors, collaborators and other third parties for research and development, the funding, construction and operation of our manufacturing facilities and the commercialization of our products. The failure to manage these relationships could delay or prevent us from developing and commercializing our products.

We have built our business largely by forming technology partnerships and licensing and other relationships with market leaders in the industrial biotechnology and chemicals industries. For example, through an exclusive worldwide license from Cargill, we have developed a next-generation yeast microorganism. In addition, we are developing a proprietary purification process that we believe will provide a key cost differentiator to our competitors by reducing the cost profile of our products and the capital intensity of our plants. We have also entered into license agreements with DuPont, entities funded by the DOE, Celexion and others. We expect that our ability to maintain and manage these collaborations will be significant factors in the success of our business.

Also, we expect that our ability to maintain and manage partnerships for the funding, construction and operation of our manufacturing facilities will be a significant factor in the success of our business. The large-scale demonstration facility we operate in Pomacle, France is owned by ARD and is available to us for our exclusive use through a toll-manufacturing agreement with ARD. We have entered into a joint venture agreement with Mitsui for the financing and construction of our planned facility in Sarnia, Ontario. We have commenced engineering and substantially completed permitting and expect this facility to be mechanically complete in 2014. We intend to work with Mitsui to build and operate two additional plants in the future.

We are working with strategic partners and collaborators through whom we either own or license the technology needed to develop new specialty chemical products, such as esterification with Lanxess, compounded polylactic acid/polybutylene succinate, or PLA/PBS, resin grades with NatureWorks, polybutylene succinate, or PBS, with Mitsubishi Chemical and silicone replacements in personal care products with Inolex Chemical Company, or Inolex. We will rely on these partners to commercialize our products and the success of these relationships will impact the market opportunity and demand for our products across our target end-markets.

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Our partnering or collaboration opportunities could be harmed and our anticipated timelines could be delayed if:

- we do not achieve our objectives under our arrangements in a timely manner, or at all;
- our existing or potential industry partners become unable, unwilling or less willing to expend their resources on research and development or commercialization efforts with us due to general market conditions, their financial condition, feedstock pricing or other circumstances, many of which are beyond our control;
- we disagree with a strategic partner or collaborator regarding strategic direction, economics of our relationship, intellectual property or other matters;
- we are unable to successfully manage multiple simultaneous partnering arrangements;
- our strategic partners and collaborators breach or terminate their agreements with us or fail to perform their agreed activities or make planned equity contributions;
- our industry partners become competitors of ours or enter into agreements with our competitors;
- applicable laws and regulations, domestic or foreign, impede our ability to enter into strategic arrangements;
- we develop processes or enter into additional partnering arrangements that conflict with the business objectives of our other arrangements; or
- consolidation in our target markets limits the number of potential industry partners.

If any of these events occur, or if we fail to maintain our agreements with our strategic partners and collaborators, we may not be able to commercialize our existing and future products, further develop our business or generate sufficient revenues to support our operations. Additionally, our business could be negatively impacted if any of our industry partners undergoes a change of control or assigns the rights or obligations under any of our agreements.

Our operations are dependent upon certain raw materials and utilities, principally sugars, carbon dioxide, hydrogen, steam and electricity, which make us vulnerable to supply availability and price fluctuations.

We are vulnerable to the supply availability and price fluctuations of certain raw materials and utilities, principally sugars, carbon dioxide, hydrogen, steam and electricity. In many cases, we do not have long-term supply agreements in place, which may result in supply problems in the future. For example, we have not yet finalized supply agreements for the required feedstock or carbon dioxide for our planned facility in Sarnia, Ontario. Our operations may also be adversely impacted by the failure of our suppliers to follow specific protocols and procedures or comply with applicable regulations, equipment malfunctions and environmental factors, any of which could delay or impede their ability to meet our demand. Our reliance on third-party suppliers also subjects us to other risks that could harm our business, including that:

- we may not be able to obtain adequate supply in a timely manner or on commercially reasonable terms;

we may have difficulty locating and qualifying alternative suppliers for sole-source supplies;

we may have production delays if products we source from alternative suppliers do not meet our standards;

we are not, and do not expect to become, a major customer of most of our suppliers and such suppliers may give other customers needs higher priority than ours; and

our suppliers may encounter financial hardships unrelated to our demand for components, which could inhibit their ability to fulfill our orders and meet our requirements.

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In the event one or more of our suppliers are unable to meet our supply demands, we may not be able to quickly replace them or find adequate supply from a different source. Any interruption or delay in the supply of sugars, carbon dioxide, hydrogen, steam or electricity, or our inability to obtain these raw materials and utilities from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demands of our customers and expand our operations, which would have a material adverse effect on our business, financial condition and results of operations.

The price of our bio-succinic acid is based in large part on the price of sugars, which can be derived from corn, wheat or other feedstocks. Fluctuations in the commodity prices of sugars or other inputs required in our production processes may reduce our profit margins, especially if we do not have long-term contracts for the sale of our output at fixed or predictable prices. The price and availability of sugars or other inputs may be influenced by factors outside of our control, including general economic, market and regulatory factors.

Our production of bio-succinic acid is currently limited to a single demonstration facility owned by a third party.

Our bio-succinic acid is currently manufactured at a single large-scale demonstration facility in Pomacle, France, which is owned by ARD and is made available for our exclusive use through a toll-manufacturing agreement. We anticipate having access to this facility until our planned facility in Sarnia, Ontario is mechanically complete and we can begin commissioning and start-up. As a result of our current dependence on a single large-scale demonstration facility, our operations and the growth of our business would be severely disrupted in the event of any material interruption at that facility. In addition, our dependence on ARD could also result in severe disruptions in our operations if ARD does not meet its contractual duties, provide quality services, meet expected deadlines or otherwise perform as expected under our toll-manufacturing agreement. Material interruptions may result from, among other things, operational difficulties, including equipment failures, contaminated fermentations, labor disputes, human error and cost overruns as well as disagreements with ARD. If operations at the large-scale demonstration facility in Pomacle, France were significantly disrupted or if we were to incur additional costs associated with engineering or operational difficulties, it would have a material adverse effect on our business, financial condition and results of operations.

Our process currently uses an *E. coli* organism, which is a type of bacteria and therefore has certain inherent disadvantages compared to other organisms. We will continue to be subject to these disadvantages while we are transitioning from *E. coli* to our yeast.

Given the relatively high sensitivity of *E. coli* to pH, agitation, process disruption and contamination, the maximum size of an *E. coli* fermenter is limited. In addition, because it is necessary for *E. coli* to be fermented at a neutral pH, at the completion of the process the succinic acid is in salt form and needs to be acidified, which results in additional process steps and energy, thereby increasing operating costs. Finally, because *E. coli* is a bacteria, there is a potential for contamination of the fermentation facilities, which can increase operating costs and reduce performance. If we are unable to successfully and completely transition to our yeast, our business model will be subject to limits on the size of fermenters that we can use and higher operating costs.

We may not be able to successfully introduce new organisms and feedstocks into our processes.

We intend to introduce new organisms and feedstocks into our processes and are working to increase our conversion yields, feedstock flexibility, manufacturing efficiency and product range through our research and development efforts and strategic partnerships. We have partnered with Cargill to develop a yeast that will potentially have higher yields and less contamination risk than the *E. coli* bacteria we currently use in our manufacturing processes. We may not, however, succeed in adopting our yeast for use in our manufacturing process for a number of reasons, including our inability to adapt our purification process for our yeast, the failure of our yeast to produce products that meet the quality standards of our customers and a higher than expected production cost as a result of using our yeast. We expect to adopt our yeast in the future. When we do, the

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transition may not be as seamless as we expect, and our yeast may require different operating conditions or otherwise differ from our expectations. We also plan to expand the range of feedstocks we use from the fermentable sugars from the hydrolysis of starch from a wheat wet mill used in the large-scale demonstration facility in France to fermentable sugars from corn wet mills in our planned facility in Sarnia, Ontario.

We may face unexpected challenges when we run our second-generation purification process and fermentation process at a single facility.

We are piloting a second-generation purification process through our agreement with a strategic technology partner. We have tested this purification process at our partner s facility in conjunction with our fermentation processes in France. However, engineering issues, additional costs or other unforeseen obstacles may arise and create delays when we implement the two processes together at a single manufacturing facility. In addition to the second-generation purification process, we are also working to improve the purification process that we currently use in order to reduce capital expenditures and other purification-related costs, but we cannot assure you that these efforts will be successful.

If we are unable to manage our growth and expand our operations successfully, our business, financial condition and results of operations may be harmed.

We have significantly expanded our business since our inception and have grown to 54 full-time employees as of March 31, 2013. We currently conduct our business in several countries, including the United States, Canada and France, and we expect to continue to expand geographically in the future. In addition, certain key members of our management have recently joined our company. We expect our growth to continue and accelerate in connection with our expansion strategy and as we transition to operating as a public company. As our operations continue to expand, we will need to continue to manage multiple locations and additional relationships with various third parties. We may not be able to maintain or accelerate our current growth rate, manage our expanding operations effectively or achieve planned growth on a timely or profitable basis. Managing our anticipated growth and expanding our operations will require us to do, among other things, the following:

- enhance our operational, financial and management controls and infrastructure, human resource policies, and reporting systems and procedures;
- effectively scale our operations, including successfully constructing our planned manufacturing facilities;
- diversify our product line to leverage our bio-succinic acid for use in multiple higher value-added products and other bio-succinic acid derivatives, and develop bio-based C6 building block chemicals;
- successfully identify, recruit, train, maintain, motivate and integrate additional employees and continue to retain, motivate and manage our existing employees;
- maintain partnerships with third parties for the development of our technology, funding and construction of our plants and the commercialization of our products; and
- maintain and grow our intellectual property portfolio.

These enhancements and improvements will require significant capital expenditures and allocation of valuable management and employee resources, which will place a strain on our operational, financial and management infrastructure. Our future financial performance and our ability to execute on our business plan will depend, in part, on our ability to effectively manage any future growth and expansion. There are no guarantees we will be able to do so in an efficient or timely manner, or at all. Our failure to effectively manage growth and expansion could have a material adverse effect on our business, financial condition and results of operations.

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We have entered into certain non-binding letters of intent, memoranda of understanding and other arrangements with future customers and others, and cannot assure you that such arrangements will lead to definitive agreements, which could harm our commercial prospects.

We have entered into non-binding letters of intent, memoranda of understanding and other arrangements with future customers and others. For example, we have entered into a non-binding letter of intent with Tereos Syral S.A., or Tereos, a leading European feedstock producer, for joint construction of two additional facilities. We have also entered several other non-binding memoranda of understanding with third parties related to our development of products such as de-icing solutions. We cannot assure you that we will be able to negotiate final terms and enter into definitive agreements with any of our future customers or others in a timely manner, or at all, and there is no guarantee that the terms of any final, definitive, binding agreement will be favorable to us or reflect the terms currently contemplated under the letters of intent, memoranda of understanding and other arrangements we have. Delays in negotiating final, definitive, binding agreements could slow the development and commercialization of the products in our pipeline, which could prevent us from growing our business, result in wasted resources and cause us to consume capital significantly faster than we currently anticipate.

We cannot assure you that we will be able to meet the product specification requirements of our customers or that our products will be accepted by our target customers.

We are currently selling our bio-succinic acid to customers today after having met their quality, purity, performance and cost requirements and intend to sell our product to other customers in the chemicals industry. These sales were made in connection with our product and market development efforts. We also intend to expand our market reach with the new products that we are developing as alternatives to the chemicals currently in use. Our potential customers include large specialty chemical companies that have well-developed manufacturing processes for the chemicals they use or pre-existing arrangements with suppliers for the chemical components they need. These potential customers frequently impose lengthy and complex product qualification procedures on their suppliers during which time they test and certify our products for use in their processes and, in some cases, determine whether products that contain the chemicals produced using our processes satisfy additional third-party specifications. Meeting these suitability standards could be a time-consuming and expensive process and we may invest substantial time and resources into such qualification efforts without ultimately securing approval by our customers. If we are unable to convince our potential customers that our products are equivalents of or comparable to the chemicals that they currently use or that using our products is otherwise beneficial to them, we will not be successful in expanding our market and our business will be adversely affected.

In addition, agreements for the sale and purchase of our products are customarily subject to the satisfaction of certain technical, commercial and production requirements. These agreements contain conditions that we and our counterparties agree on product specifications for our chemical products and that our products conform to those specifications. If we do not satisfy these contractual requirements, demand for our products and our reputation may be adversely affected.

A significant decline in the price of petroleum and petroleum-based succinic acid and other chemicals may reduce demand for our products.

The bio-succinic acid we produce is a renewable alternative to petroleum-based succinic acid. Based on our current financial modeling with respect to our planned facility in Sarnia, Ontario, we anticipate that if the price of oil falls below $35 per barrel for a sustained period of time, we may be unable to manufacture bio-succinic acid at that facility as a cost-competitive alternative to competing petroleum-based succinic acid products, which would adversely impact our operating results. Significantly higher operating expenses at the demonstration facility in Pomacle, France, due to higher raw material, utility and other costs, severely limit our ability to produce cost-competitive products at that location. World prices for oil have fluctuated widely in recent years. For example, during the last five years, the market price per barrel of West Texas Intermediate crude oil ranged from a low of $30.81 to a high of $145.66 and was $97.07 as of April 1, 2013. We expect that prices will

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continue to fluctuate in the future. Declining oil prices, or the perception of a future decline in oil prices, may adversely affect the prices we can obtain from our potential customers or dissuade potential customers from entering into long-term agreements with us to buy our products.

Some of our competitors have significantly more experience and resources than we do and technology developed by our competitors could become more commercially successful than our technology, which could negatively impact our results of operations and market share.

Competition in the bio-based chemicals business from other chemicals companies is well established, with many substantial entities having well-financed multi-national operations. Our products will compete against those produced by established companies, including a collaborative venture between DSM and Roquette Frères S.A., a collaborative venture between BASF and Purac, Gadiv Petrochemical Industries Ltd. and Kawasaki Kasei Chemicals Ltd. Competition in the bio-based chemicals business is expanding with the growth of the industry and the advent of many new technologies. In addition to competing with new technologies, we also compete against traditional petroleum-derived chemicals, many of which are produced by large companies that have greater financial and other resources than we do. Larger companies, due to their better capitalization, will be better-positioned to develop and commercialize new technologies, build new production facilities and to install existing or more advanced equipment, which could reduce our market share and harm our business. In addition, our products will face competition from those produced by early stage companies, including Genomatica, Inc. and Myriant Corporation. Our ability to compete successfully will depend on our ability to develop proprietary technologies that cost effectively produce renewable alternatives to petroleum-based chemicals. Some of our competitors are developing new technologies that may be more successful than our technology. These competitors may also have substantially greater production, financial, research and development, personnel and marketing resources than we do or may benefit from local government programs and incentives that are not available to us. As a result, our competitors may be able to compete more aggressively and sustain that competition over a longer period of time than we could. Our technologies and products may be rendered less competitive by technological advances or entirely different approaches developed by one or more of our competitors. As more companies develop new intellectual property in our markets, the possibility increases of a competitor acquiring patent or other rights that may limit our products or potential markets, which could lead to litigation. In addition, we may be subject to aggressive competitive tactics from our competitors, who may use their strong positions in the market and established relationships with existing suppliers and customers to take measures that negatively affect our ability to compete effectively in this industry. Our inability to maintain our competitiveness and grow our market share may, adversely affect our results of operations and financial position, and prevent us from achieving or maintaining profitability.

Failure to obtain regulatory approvals or permits could adversely affect our operations.

While our business currently has all necessary operating approvals material to our current operations, we must obtain and maintain numerous regulatory approvals and permits in order to build and operate our planned manufacturing facilities, including our planned facility in Sarnia, Ontario. We may not always be able to obtain modifications to existing regulatory approvals and we may not always be able to maintain all required regulatory approvals. Obtaining necessary approvals and permits could be a time-consuming and expensive process, and we may not be able to obtain them on a timely basis or at all. In the event that we fail to ultimately obtain all necessary permits, we may be forced to delay operations of the facility and the receipt of related revenues or abandon the project altogether and lose the benefit of any development costs already incurred, which would have an adverse effect on our results of operations. In addition, governmental regulatory requirements may substantially increase our construction costs, which could have a material adverse effect on our business, results of operations and financial condition. If there is a delay in obtaining any required regulatory approvals or if we fail to obtain and comply with any required regulatory approvals, the operation of our facilities or the sale of our bio-based chemicals could be delayed. For example, many countries require registration of chemicals before they can be distributed in the country, and a failure to register our chemicals would limit our ability to expedite sales into these markets. In addition, we may be required to make capital expenditures on an ongoing basis to comply with increasingly stringent federal, state, provincial and local environmental, health and safety laws, regulations and permits.

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We face risks associated with our international business.

We currently operate one large-scale demonstration facility located in Pomacle, France, plan to build and operate a manufacturing facility in Sarnia, Ontario as well as additional manufacturing facilities in the future. Our international business operations are subject to a variety of risks, including:

- difficulties in staffing and managing foreign and geographically dispersed operations;
- having to comply with various Canadian, U.S. and other laws, including export control laws and the U.S. Foreign Corrupt Practices Act;
- changes in or uncertainties relating to foreign rule and regulations that may adversely affect our ability to sell our products, perform services or repatriate profits to the United States;
- tariffs, export or import restrictions, restrictions on remittances abroad, imposition of duties or taxes that limit our ability to move our products out of these countries or interfere with the import of essential materials into these countries;
- fluctuations in foreign currency exchange rates;
- imposition of limitations on production, sale or export of bio-based chemicals in foreign countries;
- imposition of limitations on or increase of withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;
- imposition of differing labor laws and standards;
- economic, political or social instability in foreign countries;
- an inability, or reduced ability, to protect our intellectual property, including any effect of compulsory licensing imposed by government action; and
- the availability of government subsidies or other incentives that benefit competitors in their local markets that are not available to us.

We expect that we will begin expanding into other target markets, however there can be no assurance that our expansion plans will be realized, or if realized, be successful. We expect each market to have particular regulatory, feedstock sourcing and funding hurdles to overcome and future developments in these markets, including the uncertainty relating to governmental policies and regulations, could have a material adverse effect on us. If we expend significant time and resources on expansion plans that fail or are delayed, our business, reputation and financial condition may be materially and adversely affected.

Natural or man-made disasters, political, social or economic instability, or occurrence of a catastrophic or disruptive event in any of the areas where our existing or planned manufacturing facilities are located may adversely affect our business and results of operations.

We currently operate a large-scale demonstration facility in Pomacle, France and plan to build and operate manufacturing facilities strategically located throughout the world near sources of feedstock and our target markets. The operation of facilities may be harmed by natural or man-made disasters, including, without limitation, earthquakes, floods, tornadoes, fires, tsunamis, epidemics and nuclear disasters. Our facilities and the manufacturing equipment we use would be very costly to replace and could require substantial lead time to repair or replace. In addition, telecommunications failures or other systems interruptions, such as computer viruses or other cyber-attacks, at any of the locations in which we do business could significantly disrupt our operations, laboratory processes and delay shipments to our customers. Even in the absence of direct damage to our operations, large disasters, terrorist attacks, systems failures or other events could have a significant impact on our partners and customers businesses, which in turn could result in a negative impact on our results of operations. Extensive or multiple disruptions in our operations, or our partners or customers businesses, due to natural disasters or other unanticipated catastrophes could have a material adverse effect on our results of operations.

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In the event any of our facilities are affected by a disaster, we may:

- be unable to meet the deadlines of our customers;
- experience disruptions in our ability to manufacture and ship our products and otherwise operate our business, which could negatively impact our business;
- need to expend significant capital and other resources to address any damage caused by the disaster; and
- lose customers and we may be unable to regain those customers thereafter.

Our precautions to safeguard our facilities, including insurance and health and safety protocols, may not be adequate to cover our losses in any particular case. Although we possess insurance for damage to our property and the disruption of our business from casualties, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, or at all. Moreover, our facilities may experience unscheduled downtime or may not otherwise operate as planned or expected, which could have adverse consequences on our business and results of operations.

We may incur significant costs complying with environmental laws and regulations, and failure to comply with these laws and regulations could expose us to significant liabilities.

We use biological materials and genetically modified organisms, or GMOs, in our production processes and are subject to a variety of federal, state, and local laws and regulations governing the use, generation, manufacture and disposal of these materials. For example, the Toxic Substances Control Act, or TSCA, and analogous state laws and regulations impose requirements on the production, importation, use and disposal of chemicals and GMOs in the United States. In Canada, similar regulatory programs exist under the Canadian Environmental Protection Act. In particular, a regulatory program similar to TSCA requires that Environment Canada to approve the manufacture of any chemical not already included on the Domestic Substances List, or DSL. We have secured approval from Environment Canada for our use of *E. coli* and the manufacture of our bio-based succinic acid and the derivatives of succinic acid that we plan to commercialize. Environment Canada is in the process of regulatory review with respect to the use of our yeast, however we do not anticipate any issues obtaining approval. If Environment Canada requires our yeast, or any of our future C6-based products, to undergo extensive testing, which we currently do not anticipate, securing approval to manufacture such products could potentially be subject to significant delays or costs. In the European Union, we are subject to a chemical regulatory program known as REACH (Registration, Evaluation, Authorization, and Restriction of Chemical Substances). Under REACH, we are required to register our products with the European Commission. The registration process requires the submission of information to demonstrate the safety of chemicals as used and could result in significant costs or delay the manufacture or sale of our products in the European Union.

We have currently obtained requisite regulatory approvals for use of *E. coli* in the large-scale demonstration facility we operate in Pomacle, France as well as in our research and development operations in the United States and Canada. In addition, the Cargill yeast we have licensed has been approved for use in the United States for the production of lactic acid. Although we have implemented safety procedures for the disposal of these materials and waste products to comply with these laws and regulations, we cannot be sure that our safety measures are compliant or capable of eliminating the risk of accidental injury or contamination from the use, generation, manufacture, or disposal of hazardous materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our insurance coverage. There can be no assurance that violations of environmental, health and safety laws will not occur as a result of human error, accident, equipment failure or other causes.

Compliance with applicable environmental laws and regulations may be expensive, and the failure to comply with past, present or future laws could result in the imposition of fines, regulatory oversight costs, third party property damage, product liability and personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations, and our liability may exceed our total assets. We expect to

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encounter similar laws and regulations in most if not all of the countries in which we may seek to establish production capabilities, and the scope and nature of these regulations will likely be different from country to country. Environmental laws could become more stringent over time, requiring us to change our operations, or imposing greater compliance costs and increasing risks and penalties associated with violations, which could impair our research, development or production efforts and harm our business. Similarly, our business may be harmed if initiatives to reduce emissions of greenhouse gases, which tend to improve the competitiveness of our products relative to petrochemicals, do not become legally enforceable requirements, or if existing legally enforceable requirements relating to greenhouse gases are amended or repealed in the future. The costs of complying with environmental, health and safety laws and regulations and any claims concerning noncompliance, or liability with respect to contamination in the future could have a material adverse effect on our financial condition or operating results.

We use hazardous materials in our business and any claims relating to improper handling, storage or disposal of these materials or noncompliance with applicable laws and regulations could adversely affect our business and results of operations.

We use chemicals and biological materials in our business and are subject to a variety of federal, regional/state and local laws and regulations governing the use, generation, manufacture, storage, handling and disposal of these materials. Although we have implemented safety procedures for handling and disposing of these materials and waste products, we cannot be sure that our safety measures are compliant with legal requirements or adequate to eliminate the risk of accidental injury or contamination. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our insurance coverage. There can be no assurance that we will not violate environmental, health and safety laws as a result of human error, accident, equipment failure or other causes. Compliance with applicable environmental laws and regulations is expensive and time consuming, and the failure to comply with past, present, or future laws could result in the imposition of fines, third-party property damage, product liability and personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations. Our liability in such an event may exceed our total assets. Liability under environmental laws can be joint and several and without regard to comparative fault. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could impair our research, development or production efforts and harm our business. Accordingly, violations of present and future environmental laws could restrict our ability to expand facilities, or pursue certain technologies, and could require us to acquire equipment or incur potentially significant costs to comply with environmental regulations.

Loss of key personnel or our inability to attract and retain additional key personnel could harm our research and development efforts, delay launch of new products and impair our ability to meet our business objectives.

Our business involves complex operations spanning a variety of disciplines that demands a management team and employee workforce that is knowledgeable in the many areas necessary for our operations. While we have been successful in attracting experienced, skilled professionals to our company, the loss of any key member of our management team or key research and development or operational employees, or the failure to attract and retain additional such employees, could slow our development and commercialization of our products for our target markets and executing our business plans. We may not be able to attract or retain qualified employees due to the intense competition for qualified personnel among biotechnology and other technology-based businesses and the scarcity of personnel with the qualifications or experience necessary for our business. Hiring, training and successfully integrating qualified personnel into our operation is a lengthy and expensive process. The market for qualified personnel is very competitive because of the limited number of people available with the necessary technical skills and understanding of our technology and anticipated products. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience staffing constraints that will adversely affect our ability to support our internal research and development programs or satisfy customer demands for our products. In particular, our product development and research and development

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programs are dependent on our ability to attract and retain highly skilled scientific, technical and operational personnel. Competition for such personnel from numerous companies and academic and other research institutions may limit our ability to do so on acceptable terms, or at all. Substantially all of our employees are at-will employees, which means that either the employee or we may terminate their employment at any time.

In the ordinary course of business, we may become subject to lawsuits or indemnity claims, including those related to product liability, which could materially and adversely affect our business and results of operations.

From time to time, we may, in the ordinary course of business, be named as a defendant in lawsuits, claims and other legal proceedings. These actions may seek, among other things, compensation for alleged personal injury, worker s compensation, employment discrimination, breach of contract, infringement of the intellectual property rights of others, property damages or civil penalties and other losses of injunctive or declaratory relief. In the event that such actions or indemnities are ultimately resolved unfavorably at amounts exceeding our accrued liability, or at material amounts, the outcome could materially and adversely affect our reputation, business and results of operations. In addition, payments of significant amounts, even if reserved, could adversely affect our liquidity position.

In addition, the development, production and sale of our products involve an inherent risk of product liability claims and the associated adverse publicity. Our products may contain undetected defects or impurities that are not discovered until after the products have been used by customers and incorporated into products for end-users. This could result in claims from our customers or others, which could damage our business and reputation and entail significant costs to correct. We may also be sued for defects resulting from errors of our commercial partners or unrelated third parties, but any product liability claim brought against us, regardless of its merit, could result in material expense, divert management s attention and harm our business and reputation. Insurance coverage is expensive, may be difficult to obtain or not available on acceptable terms and may not adequately cover potential claims or losses. If claims or losses exceed our liability insurance coverage, we may go out of business. In addition, insurance coverage may become more expensive, which would harm our results of operations.

Adverse conditions in the global economy and disruption of financial markets may prevent the successful development and commercialization of our products, as well as significantly harm our results of operations and ability to generate revenue and become profitable.

We are subject to the risks arising from adverse changes in global economic and market conditions. The worldwide economy has been experiencing significant economic turbulence, and global credit and capital markets have experienced substantial volatility and disruption. These adverse conditions and general concerns about the fundamental soundness of domestic and international economies could limit our partners or potential partners ability or willingness to invest in new technologies or capital. Moreover, these economic and market conditions could negatively impact our current and prospective customers ability or desire to purchase and pay for our products, or negatively impact our feedstock prices and other operating costs or the prices for our products. Changes in governmental banking, monetary and fiscal policies to address liquidity and increase credit availability may not be effective. Significant government investment and allocation of resources to assist the economic recovery of various sectors which do not include the bio-based chemical industry may reduce the resources available for government grants and related funding that could assist our expansion plans or otherwise benefit us. Any one of these events, and continuation or further deterioration of these financial and macroeconomic conditions, could prevent the successful and timely development and commercialization of our products, as well as significantly harm our results of operations and ability to generate revenue and become profitable.

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If we engage in any acquisitions, we will incur a variety of costs and face numerous potential risks that could adversely affect our business and operations.

If appropriate opportunities become available, we may acquire additional businesses, assets, technologies, or products to enhance our business in the future. In connection with any future acquisitions, we could:

- issue additional equity securities which would dilute our current stockholders;
- incur substantial debt to fund the acquisitions; or
- assume significant liabilities.

Acquisitions involve numerous risks, including problems integrating the purchased operations, technologies or products, unanticipated costs and other liabilities, diversion of management s attention from our core businesses, adverse effects on existing business relationships with current and/or prospective collaborators, customers and/or suppliers, risks associated with entering markets in which we have no or limited prior experience and potential loss of key employees. We do not have experience in managing the integration process and we may not be able to successfully integrate any businesses, assets, products, technologies or personnel that we might acquire in the future without a significant expenditure of operating, financial and management resources, if at all. The integration process could divert management time from focusing on operating our business, result in a decline in employee morale and cause retention issues to arise from changes in compensation, reporting relationships, future prospects or the direction of the business. Acquisitions may also require us to record goodwill and non-amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write offs and restructuring and other related expenses, all of which could harm our operating results and financial condition. In addition, we may acquire companies that have insufficient internal financial controls, which could impair our ability to integrate the acquired company and adversely impact our financial reporting. If we fail in our integration efforts with respect to any of our acquisitions and are unable to efficiently operate as a combined organization, our business and financial condition may be adversely affected.

Our ability to use our net operating loss carryforwards to offset future taxable income may be subject to certain limitations.

As of December 31, 2012, we had approximately $51.5 million of federal tax net operating loss carryforwards, or NOLs. In general, under Section 382 of the U.S. Internal Revenue Code of 1986, as amended, or the Code, a corporation that undergoes an ownership change (as defined in Section 382 of the Code) is subject to limitations on its ability to utilize its pre-change NOLs to offset future taxable income. We have not performed a detailed analysis to determine whether an ownership change has occurred after each of our previous issuances of common stock and warrants. In addition, if we undergo an ownership change in connection with or after this public offering, our ability to utilize NOLs could be limited by Section 382 of the Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change. Furthermore, we operate both in the United States and in certain jurisdictions outside the United States. Our non-U.S. operations in France and Canada may in the future generate taxable income that is subject to income or other taxes in the jurisdictions in which those operations are conducted. As of December 31, 2012 we had approximately $22.4 million and $0.9 million of NOLs in France and Canada, respectively. Each jurisdiction in which we operate may have its own limitations on our ability to utilize NOL or tax credit carryovers generated in that jurisdiction. Also, we generally cannot utilize NOLs or tax credits generated in one jurisdiction to reduce our liability for taxes in any other jurisdiction. Accordingly, we may be subject to tax liabilities in certain jurisdictions in which we operate notwithstanding the existence of NOLs or tax credits in other jurisdictions.

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Ethical, legal and social concerns about genetically engineered products and processes, and similar concerns about feedstocks grown on land that could be used for food production, could limit or prevent the use of our products, processes and technologies and limit our revenues.

Some of our processes involve the use of genetically modified organisms, or GMOs, such as AFP 184, the bacteria we licensed from entities funded by the DOE, and further modified. The use of GMOs is subject to laws and regulations in many countries, some of which are new and some of which are still evolving. In the United States, the Environmental Protection Agency regulates the commercial use of GMOs as well as potential products from the GMOs. Public attitudes about the safety and environmental hazards of, and ethical concerns over, genetic research and GMOs could influence public acceptance of our technology and products.

While our bacteria licensed from entities funded by DOE has been approved for commercial use in France, the United States and Canada, and has been given the lowest classification in terms of risk, our ability to commercialize this bacteria in other countries and to develop and commercialize new organisms, such as our yeast, could be limited by the following factors:

- public attitudes about the safety and environmental hazards of, and ethical concerns over, genetically engineered products and processes, which could influence public acceptance of our technologies, products and processes;
- public attitudes regarding, and potential changes to laws governing ownership of genetic material, which could harm our intellectual property rights with respect to our genetic material and discourage others from supporting, developing or commercializing our products, processes and technologies;
- public attitudes and ethical concerns surrounding production of feedstocks on land which could be used to grow food, which could influence public acceptance of our technologies, products and processes;
- governmental reaction to negative publicity concerning genetically engineered organisms, which could result in greater government regulation of genetic research and derivative products; and
- governmental reaction to negative publicity concerning feedstocks produced on land which could be used to grow food, which could result in greater government regulation of feedstock sources.

Any of the risks discussed below could result in increased expenses, delays or other impediments to our programs or the public acceptance and commercialization of products and processes dependent on our technologies or inventions. In addition, the subjects of genetically engineered organisms and food versus fuel have received negative publicity, which has aroused public debate. This adverse publicity could lead to greater regulation and trade restrictions on imports of genetically engineered products or feedstocks grown on land suitable for food production.

Risks Related to Our Intellectual Property

Our inability to adequately protect, or any loss of our intellectual property rights, could materially adversely affect our business, financial condition and results of operations.

Our success will depend, in part, upon our ability to maintain patents and other intellectual property rights to protect our products from competition. We rely principally on a combination of patent, copyright, trademark and trade secret laws, confidentiality agreements, and physical security measures to establish and protect the intellectual property rights relevant to our business. We own or have rights in issued patents and pending patent applications in the U.S. and in certain other jurisdictions. These patents and patent applications cover various aspects of our technologies, including the microorganism (biocatalyst) we use in our fermentation processes, methods of producing our products, and the use of our products in specific applications. In addition, we generally enter into confidentiality and invention assignment agreements with our employees, consultants, contractors, collaboration partners and scientific and other business advisers. These measures, which seek to protect our

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intellectual property from infringement, misappropriation or other violation, may not be effective for various reasons, including the following:

- we may fail to apply for patents on important technologies or processes in a timely fashion, or at all, or abandon applications when we determine that a product or method is no longer of interest;
- we cannot predict which of our pending patent applications, if any, will result in issued patents for various reasons, including the existence of prior art that we had not been aware of, conflicting patents by others, or defects in our applications;
- we do not know whether the examination of any of our patent applications by the United States Patent and Trademark Office, or USPTO, or any similar foreign patent offices will require us to narrow or even cancel any of the claims in our pending patent applications, or to abandon a patent application altogether;
- even if our patents are granted, they may be challenged by third parties through reexamination or interference proceedings in the U.S., or opposition or cancellation proceedings in Europe, or via similar proceedings in other jurisdictions, which could result in the cancellation of certain of our patent claims or the loss of the challenged patent entirely;
- we may not be able to protect some of our technologies, and even if we receive patent or similar protection, the scope of our intellectual property rights may offer insufficient protection against lawful competition or unauthorized use;
- our products and processes may rely on the technology of others and, therefore, may require us to obtain intellectual property licenses, if available, from third parties in order for us to manufacture or commercialize our products or practice our processes;
- the patents we have been granted or may be granted may not include claims covering our products and processes, may lapse or expire, be challenged, invalidated, circumvented or be deemed unenforceable, or we may abandon them;
- our confidentiality agreements may not effectively prevent disclosure or use of confidential information and may not provide an adequate remedy in the event of unauthorized disclosure or use;
- the costs associated with enforcing patents, confidentiality and invention assignment agreements or other intellectual property rights may make aggressive enforcement prohibitive;
- we may not be aware of infringement or misappropriation of our intellectual property rights, or we may elect not to seek to prevent them;
- our efforts to safeguard our trade secrets may be insufficient to prohibit the disclosure of our confidential information;
- even if we enforce our rights aggressively, injunctions, fines and other penalties may be insufficient to deter violations of our intellectual property rights;

if we seek to enforce our rights, we may be subject to claims that our intellectual property rights are invalid, anti-competitive, otherwise unenforceable, or are already licensed to the party against whom we are asserting the claim; and

other persons may independently develop proprietary technology, information and processes that are functionally equivalent or superior to our proprietary intellectual property and processes but do not infringe or conflict with our patented or unpatented proprietary rights, or may use their own proprietary intellectual property rights to block us from taking full advantage of the market.

Our patent rights may not protect us against competition.

An important part of our business strategy is to obtain patent protection in the United States and in other countries from patent applications that we own or in-license from others that cover certain technologies used in, or relating to, our products and processes.

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Interpreting the scope and validity of patents and success in prosecuting patent applications involves complex legal and factual questions, and the issuance, scope, validity, and enforceability of a patent cannot be predicted with any certainty. Patents issued or licensed to us may be challenged, invalidated or circumvented. Moreover, third parties could practice our inventions in secret and/or in territories where we do not have patent protection. Such third parties may then try to sell or import resulting products in and into the United States or other territories. We may be unable to prove that such products were made using our inventions or infringed our intellectual property rights. Additional uncertainty may result from recent changes in the U.S. patent laws under the America Invents Act, which was signed into law on September 16, 2011 and from legal precedent handed down by the U.S. Court of Appeals for the Federal Circuit, the U.S. Supreme Court and the courts of other countries, as they determine legal issues relating to the scope, validity and construction of patent claims. Because patent applications in the U.S. and in many foreign jurisdictions typically are not published until 18 months after filing, if at all, and because the publication of discoveries in the scientific literature often lags behind the actual discoveries, there is additional uncertainty as to the priority dates of our inventions compared to inventions by others, and uncertainty as to the patentability of the claims in our pending patent applications and the validity and enforceability of claims in our issued patents. Accordingly, we cannot be certain that any of our or our licensors patent applications will result in issued patents, or if issued, the validity and/or enforceability of the issued patents. Also, we cannot guarantee that a competing patent application will not be granted with claims that cover our proposed organism or processes, or that our or our licensors patent applications or patents will not be subject to an interference proceeding with a competing patent or patent application.

Moreover, we cannot be sure that any of our or our licensors patent rights will be broad enough in scope to provide commercial advantage and prevent circumvention. Furthermore, patents are enforceable only for a limited term, and some of the U.S. patents that we have in-licensed exclusively relating to our biocatalyst will start to expire in 2015.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, or lawsuits asserted by a third party, which could be expensive, time consuming and unsuccessful.

The success of our business is highly dependent on protecting our intellectual property rights. Unauthorized parties may attempt to copy or otherwise obtain and use our products and/or technology. Policing the unauthorized use of our intellectual property rights is difficult, expensive, time-consuming and unpredictable, as is enforcing these rights against unauthorized use by others. Identifying unauthorized use of our intellectual property rights is difficult because we may be unable to monitor the processes and/or materials being employed by other parties. In addition, in an infringement proceeding, a patent of ours or our licensors may be found invalid, unenforceable, anti-competitive or not infringed. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing.

Third parties may challenge our or our licensors patents via reexamination proceedings or *inter partes* review in the United States, opposition or cancellation proceedings in Europe, or similar proceedings in other jurisdictions. The outcome of these proceedings can be unpredictable and may result in the claims being substantially narrowed or cancelled altogether. As a result of changes in U.S. patent law under the America Invents Act, any U.S. patent that we or our licensors obtain having an effective filing date on or after March 16, 2013 could be challenged by a third party using the new post-grant review process, which could result in the claims of the challenged patents being narrowed or even cancelled. Furthermore, in the United States, patents with an effective filing date prior to March 16, 2013 are awarded to the first person to make an invention rather than to the first person to file a patent application, and therefore such patents could be subject to an interference proceeding conducted by the USPTO to determine which party was the first to create an invention. As result, interference proceedings provoked by third parties or brought by the USPTO may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of our collaborators or licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights from the prevailing party. As a result, our business could be harmed if the prevailing party does not offer us a

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license on commercially reasonable terms. Litigation or interference proceedings may fail and, even if successful, may take several years to resolve, result in substantial costs, and distract our management and other employees, and otherwise interfere with the running of our business. We may be unable to prevent, alone or with our licensors, infringement or misappropriation of our proprietary rights, particularly in countries where the laws may not protect those rights as fully as in the U.S. Furthermore, because of the amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

We may be unable to enforce our intellectual property rights throughout the world, which could negatively affect our rights, competitive position and business.

We may in the future decide to build, or partner with others in building manufacturing facilities using our technologies in countries other than the United States and Canada. We may not have sufficient patent or other intellectual property rights in those countries to prevent a competitor from using our or competing technologies. Furthermore, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal, state and provincial laws in the United States and Canada. Many companies have encountered problems in protecting and enforcing intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries do not favor the enforcement of patents and other intellectual property protection. This could make it difficult for us or our licensors to prevent or stop any infringement of our or our licensors patents or misappropriation of the subject matter of our other proprietary or intellectual property rights. Proceedings to enforce our and our licensors patents and other proprietary rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to enforce our intellectual property rights in such countries may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or in-license.

We may be unable to operate our business without infringing the intellectual property rights of others, which could subject us to costly litigation or prevent us from offering certain products which could have a material adverse effect on our business.

Although we are currently unaware of any claims or threatened claims, our ability to manufacture and commercialize our proposed technologies, processes and products depends upon our and our licensors ability to develop, manufacture, market, license and/or sell such technologies, processes and products without violating the proprietary rights of third parties. Numerous U.S. and foreign patents and pending patent applications owned by third parties exist in fields that relate to our proposed technologies, processes and products and our underlying methodologies and discoveries. In addition, many companies actively police and enforce their intellectual property rights, including their patent rights, to gain a competitive advantage. Third parties may allege that our existing or proposed technologies, processes and products or our methods infringe their intellectual property rights. It is possible that the number and frequency of law suits alleging infringement of intellectual property rights may increase as the number of products and competitors in our market increases. In addition, to the extent that we gain greater visibility and market exposure as a public company, we face a greater risk of being the subject of intellectual property infringement claims. We cannot be certain that the conduct of our business does not and will not infringe intellectual property or other proprietary rights of others. If the making, using, selling, offering for sale or importing of our proposed products or practice of our proprietary technologies or processes are found to infringe third party intellectual property rights, including patent rights, we could be prohibited from manufacturing and commercializing the infringing technology, process or product unless we obtain a license under the applicable third party patent and pay royalties or are able to design around such patent.

We may be unable to obtain a license on terms acceptable to us, if at all, and we may be unable to redesign our products, biocatalysts or processes to avoid infringement. Even if we are able to redesign our products, biocatalysts or processes to avoid an infringement claim, our efforts to design around the patent could require significant effort and expense and ultimately may lead to an inferior or more costly product and/or process. Any claim of infringement by a third party, even one without merit, could cause us to incur substantial costs

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defending against the claim, could distract our management and employees, and generally interfere with our business. Furthermore, if any such claim is successful, a court could order us to pay substantial damages, including compensatory damages for any infringement, plus prejudgment interest and could, in addition, treble the compensatory damages and award attorney fees. These damages could be substantial and could harm our reputation, business, financial condition and operating results. A court also could enter orders that temporarily, preliminarily or permanently prohibit us, our licensees and our customers from making, using, selling, offering to sell or importing one or more of our products or practicing our proprietary technologies or processes, or could enter an order requiring us to undertake certain remedial activities. Any of these events could seriously harm our business, operating results and financial condition.

We also rely in part on trade secret laws, confidentiality agreements, and security procedures, which can be difficult to protect and enforce, and which may not adequately prevent disclosures of trade secrets and other proprietary information; our failure to obtain or maintain such protections could adversely affect our competitive position.

We rely in part on trade secret laws and contractual agreements to protect some of our confidential and proprietary information, technology and processes, particularly where we do not believe patent protection is appropriate or obtainable. We have taken various measures to protect our trade secrets and other confidential or proprietary information, including requiring new employees and consultants to execute confidentiality agreements upon the commencement of employment or consulting engagement with us. However, trade secrets are difficult to maintain and protect and our security procedures may be insufficient to prevent disclosure of our trade secrets. In addition, discussions with our business partners, including our licensors, may require us to share confidential and proprietary information with them and other third parties. Our business partners employees, consultants, contractors or scientific and other business advisers may unintentionally or willfully breach their confidentiality and/or non-use obligations, including by disclosing our confidential or proprietary information to our competitors. Such agreements may be deemed unenforceable, fail to provide adequate remedies, or become subject to disputes that may not be resolved in our favor. Enforcement of claims that a third party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, foreign courts are sometimes less willing than U.S. courts to protect trade secrets. Our failure to obtain or maintain trade secret protection could adversely affect our competitive business position. Furthermore, trade secret laws do not prevent our competitors from independently developing equivalent knowledge, methods and know-how that could be used to compete with us and our products.

We may lose our competitive advantage if our competitors develop similar, analogous or alternative organisms that produce bio-succinic acid or other competing chemical products.

We currently use proprietary microorganisms (biocatalysts) in our production of bio-succinic acid and other cellular metabolites such as C6 compounds. If our organisms are stolen, or misappropriated, they could be used by third parties for their own commercial gain, even though they may be in breach of our intellectual property rights. Furthermore, third parties may use similar or analogous organisms in jurisdictions where we or our licensors do not have patent protection. Third parties may also independently develop similar, analogous or alternative organisms that can also produce bio-succinic acid or other metabolites without infringing our intellectual property rights. If any of these were to occur, it could be difficult for us to discover, challenge or prevent the third party from using their organisms and competing with us in the production of bio-succinic acid or other metabolites.

Our rights to key intellectual property are in-licensed from third parties, and the limitation or termination of these and related agreements would be highly detrimental to us and our business.

We are a party to certain license agreements that provide us with the right to practice key technology used in our business. For example, we have entered into license agreements with UT-Battelle, LLC, or UT-Batelle, and UChicago Argonne, LLC, or UChicago Argonne, for the *E. coli* bacteria we use currently to produce bio-succinic

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acid, Cargill for our yeast that is being developed to produce bio-succinic acid, DuPont for catalysts and methods for converting our bio-succinic acid into bio-based 1,4 BDO, and Celexion for a procedure to make C6 compounds, such as adipic acid. All of these license agreements impose various obligations on us, including royalty payments and, in certain instances, milestone payments. If we fail to comply with these or other obligations, certain agreements provide that the licensors may have the right to terminate the license or convert the exclusive license to a nonexclusive license, in which case our competitors may gain access to these important licensed technologies, and we may be unable to develop or market products, technologies or processes covered by the licensed intellectual property. Often our licensors have the right to control the filing, prosecution, maintenance and defense of the licensed intellectual property and, if a third party infringes any of the licensed intellectual property, some of our licensors may control the resulting a legal or other proceeding against that third party to stop or prevent such infringement. As a result, our licensors may take actions or make decisions relating to these matters that could harm our business or impact our rights.

Certain key inventions in-licensed by us were made with funding received from U.S. government agencies, which could negatively impact our rights.

Some of the research undertaken on *E. coli* bacteria we have in-licensed from entities funded by the DOE was funded by grants from certain U.S. government agencies. As a result of U.S. government funding, the government obtained certain rights in any resulting patents and technical data, generally including, at a minimum, a nonexclusive license authorizing the government to practice or have practiced the invention or technical data pertaining to microbial production of bio-succinic acid using *E. coli* for or on behalf of the U.S. government. In the United States, government funding must be disclosed in any resulting patent applications, and our rights in such inventions are and will be subject to government license rights, periodic progress reporting, foreign manufacturing restrictions and march-in rights. March-in rights refer to the right of the U.S. government, under certain limited circumstances, to require us to grant a license to technology developed under a government grant to a responsible applicant, or, if we refuse, to grant such a license itself. March-in rights can be triggered if the government determines that we have failed to work sufficiently towards achieving practical application of a technology or if action is necessary to alleviate health or safety needs, to meet requirements of federal regulations or to give preference to U.S. industry. If the terms of a funding agreement are breached, the government may gain rights to the intellectual property developed in related research.

Furthermore, the terms of a research grant from a U.S. government agency may prohibit the use of new technologies developed using those grants in non-U.S. manufacturing plants, which could adversely affect our business. Under the Bayh-Dole Act of 1980, a party that acquires an exclusive license for an invention that was funded in whole or in part by a federal research grant is subject to the following government rights:

- products using the invention that are sold in the United States are to be manufactured substantially in the United States, unless a waiver is obtained;
- the U.S. government may force the granting of a license to a third party who will make and sell the needed product if the licensee does not pursue reasonable commercialization of a needed product using the invention; and
- the U.S. government may use the invention for its own needs.

If we fail to meet these guidelines, we could lose our exclusive rights to patents and patent applications in-licensed from UT-Battelle and UChicago Argonne that are directed to the *E. coli* organism currently used in our process for manufacturing bio-succinic acid. Loss of these exclusive rights could be detrimental to our business because we may be required to convert our bio-succinic acid production process to a yeast-based, or other, process for manufacturing bio-succinic acid, and such conversion may interrupt our ability to manufacture bio-succinic acid and require further capital expenditures to adapt our planned manufacturing facility. We believe that our proposed manufacture and sale of bio-succinic acid using the in-licensed *E. coli* organism will be in compliance with requirements of the Bayh-Dole Act. In particular, we have received a waiver from the DOE, as

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to requirements to manufacture products in the United States, for our planned facility in Sarnia, Ontario. We may need to request additional waivers from the DOE as we expand our manufacturing capabilities.

Risks Related to this Offering and Our Common Stock

Our stock price may fluctuate significantly and the market price of our common stock following this offering may drop below the price you pay.

Prior to this offering, you could not buy or sell our common stock publicly. Our common stock has been approved for listing on NYSE in connection with this offering. We also intend to list our common stock on the Professional Segment of NYSE Euronext in Paris under the symbol BIOA. However, an active public market for our common stock may not develop or be sustained after the completion of this offering. We will negotiate and determine the initial public offering price of our common stock with the underwriters based on several factors. This price may vary from the market price of our common stock after this offering. You may be unable to sell your shares of common stock at or above the initial offering price. The market price of our common stock could fluctuate significantly after this offering. In recent years, the stock market has experienced significant volatility, including with respect to technology stocks. The volatility of technology stocks often does not relate to the operating performance of the companies represented by the stock. These and other factors may cause the market price and demand for our common stock to fluctuate substantially, which may limit or prevent investors from readily selling their shares of common stock and may otherwise negatively affect the liquidity of our common stock. In addition, in the past, when the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. Such a lawsuit could also divert the time and attention of our management from other business concerns.

Our principal stockholders will exercise significant control over our company.

After this offering, our two largest stockholders will beneficially own, in the aggregate, shares representing approximately 35.4% of our outstanding capital stock. Although we are not aware of any voting arrangements that will be in place among these stockholders following this offering, if these stockholders were to choose to act together, as a result of their stock ownership, they would be able to influence our management and affairs and control all matters submitted to our stockholders for approval, including the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might affect the market price of our common stock.

Future sales of shares by existing stockholders could cause our stock price to decline.

If our existing stockholders sell, or indicate an intent to sell, substantial amounts of our common stock in the public market after the 180-day contractual lock-up and other legal restrictions on resale discussed in this prospectus lapse, the trading price of our common stock could decline significantly and could decline below the initial public offering price. We cannot predict the effect, if any, that future public sales of these shares or the availability of these shares for sale will have on the market price of our common stock. Our officers, directors and certain stockholders have executed lock-up agreements preventing them from selling any stock they hold for a period of 180 days from the date of this prospectus, subject to certain limited exceptions described under the section entitled Underwriting. The representatives of the underwriters may, in their sole discretion, permit our officers, directors and current stockholders to sell shares prior to the expiration of these lock-up agreements.

After the lock-up agreements pertaining to this offering expire, an additional 9,742,950 shares will be eligible for sale in the public market in accordance with and subject to the limitation on sales by affiliates as provided in Rule 144 under the Securities Act of 1933, as amended, or the Securities Act. In addition, shares

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reserved for future issuance under our equity incentive plans will become eligible for sale in the public market in the future, subject to certain legal and contractual limitations. Moreover, 180 days after the completion of this offering, holders of 8,486,415 shares of our common stock will have the right to require us to register these shares under the Securities Act pursuant to a shareholders agreement. If our existing stockholders sell substantial amounts of our common stock in the public market, or if the public perceives that such sales could occur, this could have an adverse impact on the market price of our common stock, even if there is no relationship between such sales and the performance of our business.

Our financial results could vary significantly from quarter to quarter and are difficult to predict.

Our quarterly operating results may fluctuate significantly in the future. As a result of these fluctuations, we may fail to meet or exceed the expectations of research analysts covering the company or of investors, which could cause our stock price to decline. Future quarterly fluctuations, many of which are beyond our control, may result from a number of factors, including but not limited to:

- the timing and cost associated with the completion of our planned manufacturing facilities;
- the level and timing of expenses for product development and sales, general and administrative expenses;
- delays or greater than anticipated expenses associated with the scale-up and the commercialization of chemicals produced using our processes;
- our ability to successfully enter into or maintain partnering arrangements, and the terms of those relationships;
- commercial success with our existing product and success in identifying and sourcing new product opportunities;
- the development of new competitive technologies or products by others and competitive pricing pressures
- fluctuations in the prices or availability of the feedstocks required to produce chemicals using our processes or those of our competitors;
- changes in demand for our products, including any seasonal variations in demand;
- changes in product development costs due to the achievement of certain milestones under third-party development agreements;
- changes in the amount that we invest to develop, acquire or license new technologies and processes;
- business interruptions, including disruptions in the production process at any facility where chemicals produced using our processes are manufactured as well as a result of changes in the technologies we employ, including our transition from our *E. coli* bacteria to our yeast;
- departures of executives or other key management employees;

- foreign exchange fluctuations;
- changes in general economic, industry and market conditions, both domestically and in our foreign markets; and
- changes in governmental, accounting and tax rules and regulations, environmental, health and safety requirements, and other rules and regulations.

Based on the above factors and other uncertainties, we believe our future operating results will vary significantly from quarter-to-quarter and year-to-year. As a result, quarter-to-quarter and year-to-year comparisons of operating results are not necessarily meaningful nor do they indicate what our future performance will be.

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We will have broad discretion in how we use the net proceeds of this offering. We may not use these proceeds effectively, which could affect our results of operations and cause our stock price to decline.

We will have considerable discretion in the application of the net proceeds of this offering. We currently intend to use the net proceeds from this offering to construct additional facilities and for working capital and other general corporate purposes, including the expenses and costs of being a public company and possible investments in, or acquisitions of, complementary businesses, services or technologies. We also expect to continue to expend significant funds for research and product development. As a result, investors will be relying upon management s judgment with only limited information about our specific intentions for the use of the balance of the net proceeds of this offering. We may use the net proceeds for purposes that do not yield a significant return or any return at all for our stockholders. In addition, pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

Provisions of Delaware law and our charter documents could delay or prevent an acquisition of our company and could make it more difficult for you to change management.

Provisions of our amended and restated certificate of incorporation and amended and restated by-laws, which will be effective upon the closing of this offering and provisions of Delaware law, may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions may also prevent or delay attempts by stockholders to replace or remove our current management or members of our board of directors. These provisions include:

- a classified board of directors;
- limitations on the removal of directors;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings;
- the ability of our board of directors to make, alter or repeal our amended and restated by-laws; and
- the authority of our board of directors to issue blank check preferred stock, the terms of which may be established and the shares of which may be issued without stockholder approval.

The affirmative vote of the holders of not less than 75% of our shares of capital stock entitled to vote, and not less than 75% of the outstanding shares of each class entitled to vote thereon as a class, is generally necessary to amend or repeal the above provisions that are contained in our amended and restated certificate of incorporation. Also, absent approval of our board of directors, our amended and restated by-laws may only be amended or repealed by the affirmative vote of the holders of at least 75% of our shares of capital stock entitled to vote.

In addition, upon the closing of this offering, we will be subject to the provisions of Section 203 of the Delaware General Corporation Law, which limits business combination transactions with stockholders of 15% or more of our outstanding voting stock that our board of directors has not approved. These provisions and other similar provisions make it more difficult for stockholders or potential acquirers to acquire us without negotiation. These provisions may apply even if some stockholders may consider the transaction beneficial to them.

As a result, these provisions could limit the price that investors are willing to pay in the future for shares of our common stock. These provisions might also discourage a potential acquisition proposal or tender offer, even if the acquisition proposal or tender offer is at a premium over the then current market price for our common stock.

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We do not intend to pay cash dividends. We have never paid dividends on our capital stock and we do not anticipate paying any dividends in the foreseeable future. Consequently, any gains from an investment in our common stock will likely depend on whether the price of our common stock increases.

We have not paid dividends on any of our capital stock to date and we currently intend to retain our future earnings, if any, to fund the development and growth of our business. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future. Consequently, in the foreseeable future, you will likely only experience a gain from your investment in our common stock if the price of our common stock increases.

No public market for our common stock exists and an active trading market for our common stock may not develop, which could limit your ability to resell your shares at or above the initial public offering price.

Prior to this offering, there has been no public market for shares of our common stock. Although our shares of common stock have been approved to be listed on NYSE in connection with this offering, an active trading market for our shares may never develop or be sustained following this offering. The initial public offering price of our common stock will be determined through negotiations between us and the underwriters. This initial public offering price may not be indicative of the market price of our common stock after this offering. In the absence of an active trading market for our common stock, investors may not be able to sell their common stock at or above the initial public offering price or at the time that they would like to sell.

We will incur significant increased costs as a result of operating as a public company and our management will be required to devote substantial time to new compliance initiatives.

As a public company and particularly after we cease to be an emerging growth company (and cease to take advantage of certain exceptions from reporting requirements that are available under the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, as an emerging growth company), we will incur significant legal, accounting, administrative and other costs and expenses that we did not face as a private company. As a public company, we will be subject to rules and regulations that regulate corporate governance practices of public companies, including the Securities Exchange Act of 1934, as amended, or the Exchange Act, the Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act, and rules promulgated by NYSE. We expect that compliance with these public company requirements will increase our costs and make some activities more time consuming and may result in a diversion of management s time and attention from revenue-generating activities. For example, we will create new board committees, adopt new internal controls and disclosure controls and procedures, and devote significant management resources to our Securities and Exchange Commission reporting requirements. A number of those requirements will require us to carry out activities we have not done previously. For example, beginning with our Annual Report on Form 10-K filed after our fiscal year ending December 31, 2014, we will need to furnish a report by management on the effectiveness of our internal control over financial reporting. In addition, our independent registered chartered professional accountants will be required to attest to the effectiveness of our internal control over financial reporting beginning with our Annual Report on Form 10-K following the date on which we are no longer an emerging growth company, which may be up to five full years following the date of this offering. Furthermore, if we are unable to build our internal controls and accounting capabilities or subsequently identify any issues in complying with those requirements (for example, if we or our registered public accounting firm identify a material weakness or significant deficiency in our internal control over financial reporting), we could incur additional costs rectifying those issues, and the existence of those issues could adversely affect us, our reputation or investor perceptions of us. We expect that the additional reporting and other obligations imposed on us by these rules and regulations will increase our legal and financial compliance costs and the costs of our related legal, accounting and administrative activities significantly. These increased costs will require us to divert a significant amount of money that we could otherwise use to expand our business and achieve our strategic objectives.

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We are an emerging growth company and have elected to take advantage of reduced reporting requirements applicable to emerging growth companies, which could make our common stock less attractive to investors.

We are an emerging growth company, as defined in the JOBS Act, and we have elected to take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, or Section 404, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved, and delaying the adoption of new or revised accounting standards until they are applicable to private companies. As a result of our election to use the extended transition period provided in Section 7(a)(2)(B) of the Securities Act, our financial statements may not be comparable to companies that comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for companies that comply with public company effective dates. We cannot predict if investors will find our common stock less attractive as a result of our choice to rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an emerging growth company for up to five years, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed $1 billion, (ii) the date that we become a large accelerated filer as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock that is held by non-affiliates exceeds $700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than $1 billion in non-convertible debt during the preceding three year period.

If we fail to augment and maintain an effective system of internal controls, we might not be able to report our financial results accurately or prevent fraud. In that case, our stockholders could lose confidence in our financial reporting, which would harm our business and could negatively impact the price of our stock.

Although we are augmenting our internal controls and related staff in anticipation of becoming a public company, we are not currently required to comply with Section 404 or to make an assessment of the effectiveness of our internal control over financial reporting. After becoming a public company, management will be required to deliver a report that assesses the effectiveness of our internal control over financial reporting. Additionally, Section 404 may require our auditors to deliver an attestation report on the effectiveness of our internal controls over financial reporting in conjunction with their opinion on our audited financial statements as of December 31 subsequent to the year in which this registration statement becomes effective. We have elected to take advantage of certain exceptions from reporting requirements that are available to emerging growth companies under the JOBS Act and therefore we will not be required to make our first annual assessment of our internal control over financial reporting pursuant to Section 404 until after the date we are no longer an emerging growth company as defined in the JOBS Act, which may be up to five years from our initial public offering.

The process of designing and implementing effective internal controls and procedures, and expanding our internal accounting capabilities, is a continuous effort that requires us to anticipate and react to changes in our business and the economic and regulatory environments and to expend significant resources to establish and maintain a system of internal controls that is adequate to satisfy our reporting obligations as a public company. The standards that must be met for management to assess the internal control over financial reporting as effective are complex, and require significant documentation, testing and possible remediation to meet the detailed standards. We cannot be certain at this time whether we will be able to successfully complete the implementation of controls and procedures or the certification and attestation requirements of Section 404. In connection with our most recent audit, our auditors identified one significant deficiency related to stock options granted to consultants. In the future we may have additional significant deficiencies, which could cause us to fail to meet

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the periodic reporting obligations that we will be subject to under Section 404 or result in material misstatements in our financial statements. If we identify and report a material weakness or any additional significant deficiencies, it could adversely affect our stock price.

Investors in this offering will pay a much higher price than the book value of our common stock and will experience immediate and substantial dilution.

If you purchase common stock and warrants in this offering, you will pay more for your shares than the amounts paid by existing stockholders for their shares. You will incur immediate and substantial dilution of $6.16 per share, representing the difference between our pro forma net tangible book value per share after giving effect to this offering and an assumed initial public offering price of $11.00 per combination, which is the mid-point of the estimated price range set forth on the cover page of this prospectus. Any exercise of outstanding options and warrants, including the warrants issued in this offering, will result in further dilution. For a further description of the dilution that you will experience immediately after this offering, see Dilution.

If securities or industry research analysts do not publish or cease publishing research or reports about our business or if they issue unfavorable commentary or downgrade our common stock, our stock price and trading volume could decline.

The trading market for our common stock will rely in part on the research and reports that securities and industry research analysts publish about us, our industry and our business. Securities and industry research analysts do not currently provide research coverage of us, and we cannot assure you that any research analysts, including those in the United States and Europe, will provide research coverage on us or our common stock after the completion of this offering. We do not have any control over these analysts. Our stock price and trading volumes could decline if one or more securities or industry analysts downgrade our common stock, issue unfavorable commentary about us, our industry or our business, cease to cover our company or fail to regularly publish reports about us, our industry or our business.

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

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

Holders of our warrants will have no rights as common stockholders until such holders exercise their warrants and acquire our common stock.

Until holders of warrants acquire shares of our common stock upon exercise of the warrants, holders of warrants will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of the warrants, the holders thereof will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

The warrants included in this offering may not have any value.

The warrants will expire on May , 2016 unless we in our sole discretion extend the expiration date. In the event our common stock price does not exceed the exercise price of the warrants during the period when the warrants are exercisable, the warrants may not have any value.

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Risks Relating to the Listing and Trading of Our Common Stock on NYSE Euronext Paris

We intend to list our common stock on the Professional Segment of NYSE Euronext in Paris under the symbol BIOA. If we list on NYSE Euronext Paris, the risks relating to this offering and our common stock, as set out above, will apply in similar respects to investors trading our common stock on NYSE Euronext Paris. In addition, investors trading our common stock on NYSE Euronext Paris should consider the following additional risks relating specifically to the admission to listing and trading of our common stock on NYSE Euronext Paris.

In the event our common stock is dual listed on NYSE and NYSE Euronext Paris, the dual listing may adversely affect the liquidity and trading prices for our common stock on one or both of the exchanges as a result of circumstances that may be outside of our control.

Although we believe the dual listing of our common stock will be beneficial for the liquidity of our common stock as it should permit a broader base of investors to purchase shares of our common stock in secondary trading, in the event our common stock is dual listed it may also adversely affect liquidity and trading prices for our common stock on one or both of the exchanges as a result of circumstances that may be outside of our control. For example, transfers by investors of our shares from trading on one exchange to the other could result in increases or decreases in liquidity and/or trading prices on either or both of the exchanges. In addition, investors could seek to sell or buy our common stock to take advantage of any price differences between the two markets through a practice referred to as arbitrage. Any arbitrage activity could create unexpected volatility in both our common stock prices on either exchange and the volumes of shares of our common stock available for trading on either exchange.

In the event our common stock is dual listed and trades in U.S. dollars on NYSE and in Euros on NYSE Euronext Paris, the trading price of our common stock on NYSE Euronext Paris and the value of dividends, if any, paid on our common stock to investors who hold our common stock on NYSE Euronext Paris and elect to receive dividends in Euros may be materially adversely affected by fluctuations in the exchange rate for converting U.S. dollars into Euros.

In the event our common stock is dual listed, we may choose to have our common stock trade in U.S. dollars on NYSE and in Euros on NYSE Euronext Paris. Fluctuations in the exchange rate for converting U.S. dollars into Euros may affect the value of our common stock. Specifically, as the value of the U.S. dollar relative to the Euro declines, each of the following values will also decline (and vice versa):

- the Euro equivalent of the U.S. dollar trading price of our common stock on NYSE, which may consequently cause the trading price of our common stock on NYSE Euronext Paris to also decline; and

- the Euro equivalent of cash dividends paid in U.S. dollars on our common stock if investors holding our common stock on NYSE Euronext Paris request dividends to be paid in Euros.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that are based on our management s belief and assumptions and on information currently available to our management. Although we believe that the expectations reflected in these forward-looking statements are reasonable, these statements relate to future events or our future financial performance, and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements.

Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terminology such as may, will, should, could, expects, intends, plans, anticipates, believes, estimates, predicts, potential, of these terms or other comparable terminology. These statements are only predictions. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties and other factors, which are, in some cases, beyond our control and which could materially affect results. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed in the section entitled Risk Factors and elsewhere in this prospectus. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those implied or projected by the forward-looking statements. No forward-looking statement is a guarantee of future performance. You should read this prospectus and the documents that we reference in this prospectus and have filed with the Securities and Exchange Commission as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements.

In particular, forward-looking statements in this prospectus include statements about:

- the expected applications of our products and the sizes of addressable markets;
- our ability to gain market acceptance for bio-succinic acid, its derivatives and other building block chemicals;
- the timing, funding, construction and operation of our planned Sarnia, Ontario plant and our other planned manufacturing facilities;
- the benefits of our transition from our *E. coli* bacteria to our yeast;
- our ability to commence commercial sales and execute on our commercial expansion plan, including the timing and volume of our future production and sales;
- the expected cost-competitiveness and relative performance attributes of our bio-succinic acid and the products derived from it;
- our ability to cost-effectively produce and commercialize bio-succinic acid, its derivatives and other building block chemicals;
- customer qualification, approval and acceptance of our products;
- our ability to maintain and advance strategic partnerships and collaborations and the expected benefits and accessible markets related to those partnerships and collaborations;

our ability to economically obtain feedstock and other inputs;

the future price and volatility of renewable feedstocks or petroleum;

the achievement of advances in our technology platform;

our ability to obtain and maintain intellectual property protection for our products and processes and not infringe on others rights;

our intended dual listing on NYSE and NYSE Euronext Paris;

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government regulatory and industry certification approvals for our facilities and products; and

government policymaking and incentives relating to bio-chemicals.

The forward-looking statements in this prospectus represent our views as of the date of this prospectus. We anticipate that subsequent events and developments may cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. Therefore, these forward-looking statements do not represent our views as of any date other than the date of this prospectus.

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USE OF PROCEEDS

We estimate that our net proceeds from the sale of the shares of our common stock and warrants in this offering will be approximately $79,340,000, or $91,616,000 if the underwriters fully exercise their option to purchase additional shares, based upon an assumed initial public offering price of $11.00 per combination, which represents the mid-point of the estimated price range set forth on the cover page of this prospectus, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. A $1.00 increase (decrease) in the assumed initial public offering price of $11.00 per combination would increase (decrease) the net proceeds to us from this offering by $7.4 million, assuming the number of shares and warrants offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, an increase (decrease) of one million shares from the expected number of shares to be sold in this offering, assuming no change in the assumed initial public offering price per combination, would increase (decrease) our net proceeds from this offering by $10.2 million after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently intend to use a portion of the net proceeds of this offering together with existing cash resources, equity from our partner Mitsui, low-interest loans, government grants and borrowings under our proposed credit facility with HTGC for working capital and other general corporate purposes, including:

- approximately $80.4 million to complete the construction of the initial phase of our planned facility in Sarnia, Ontario with an expected capacity of 30,000 metric tons; and
- the balance for working capital and other general corporate purposes, which will also include expenses and costs associated with being a public company as well as certain interest and principal payments as they come due under our government loans and our proposed credit facility with HTGC.

The terms and conditions of our proposed credit facility with HTGC are described in the section entitled Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources. The closing of this proposed credit facility is subject to the satisfactory completion of due diligence by HTGC and formal approval by HTGC s commitment committee.

Based on our estimated capital requirements, we expect that the initial phase of our planned facility in Sarnia, as well as our working capital requirements through the mechanical completion of that facility, will be fully funded with a portion of the net proceeds of this offering, together with various governmental grants and loans that we anticipate receiving as well as loans from other sources, equity from our partner Mitsui and cash on hand. We may require additional financing to fund the planned expansion of the Sarnia facility and to fund the construction of additional facilities.

In addition, the amount of what, and timing of when, we actually spend for these purposes may vary significantly and will depend on a number of factors, including our future revenue and cash generated by operations and the other factors described in the section entitled Risk Factors in this prospectus. Accordingly, our management will have broad discretion in applying the net proceeds of this offering. We cannot guarantee the specific amount of the net proceeds that will be used to construct our planned facilities or be used for other general corporate purposes. Pending specific application of our net proceeds, we intend to invest the net proceeds in high quality, investment grade, short-term fixed income instruments which include corporate, financial institution, federal agency or U.S. government obligations.

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DIVIDEND POLICY

We have never declared or paid dividends on our common stock. We do not anticipate paying any dividends on our common stock in the foreseeable future. We currently intend to retain all available funds and any future earnings to fund the development and growth of our business. Any future determination to declare dividends will be subject to the discretion of our board of directors and will depend on various factors, including applicable laws, our results of operations, financial condition, future prospects and any other factors deemed relevant by our board of directors. In addition, any future indebtedness that we may incur could preclude us from paying dividends. Investors should not purchase our common stock with the expectation of receiving cash dividends.

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CAPITALIZATION

The following table sets forth our cash and capitalization as of December 31, 2012:

- on an actual basis;
- on an adjusted basis to give effect to (i) the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders pursuant to a Termination and Release Agreement; (ii) our sale in this offering of 8,000,000 shares of our common stock at an assumed initial public offering price of $11.00 per share, which represents the mid-point of the estimated price range set forth on the cover page of the prospectus; and (iii) the issuance of warrants to acquire 4,000,000 shares of our common stock at an assumed exercise price of $11.00 per combination, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us; and
- on a pro forma as adjusted basis to give effect to (i) the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders pursuant to a Termination and Release Agreement; (ii) our sale in this offering of 8,000,000 shares of our common stock at an assumed initial public offering price of $11.00 per share, which represents the mid-point of the estimated price range set forth on the cover page of the prospectus; (iii) the issuance of warrants to acquire 4,000,000 shares of our common stock at an assumed exercise price of $11.00 per combination, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us; and (iv) the receipt of up to $25.0 million less financing fees of approximately $0.70 million from Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, subsequent to the closing of this offering. The proposed terms of this credit facility, including the conditions that must be met prior to the closing of the credit facility, are set forth in the section entitled Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources.

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You should read this table in conjunction with the sections entitled Selected Consolidated Financial Data and Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and related notes included elsewhere in this prospectus. The unaudited information below is prepared for illustrative purposes only and our capitalization following the completion of this offering will be adjusted based on the actual initial public offering price, the closing of the offering made hereby and other terms of the offering determined at pricing.

	As of December 31, 2012		
	Actual	Adjusted(1)	Pro Forma As Adjusted
	(In thousands, except share and per share data)		
Cash(2)	$ 25,072	$ 104,272	$ 128,572
Long-term debt, including current portion(3)	2,600	2,600	27,600
Warrants (financial liability)(4)		14,061	14,061
Stockholders equity:			
Common stock: $0.01 par value per share; 17,500,000 authorized and 10,349,815 issued and outstanding, actual; 250,000,000 authorized and 18,412,815 issued and outstanding, as adjusted	104	184	184
Preferred stock: $0.01 par value per share; zero shares authorized, issued or outstanding, actual; 5,000,000 shares authorized, zero shares issued or outstanding, as adjusted			
Additional paid-in capital	113,781	179,712	179,712
Warrants (equity)	3,075	3,075	3,075
Accumulated deficit	(81,826)	(82,698)	(82,698)
Accumulated other comprehensive income (loss)	(95)	(95)	(95)
Non-controlling interest	2,759	2,759	2,759
Total stockholders equity(5)	37,798	102,937	102,937
Total capitalization	$ 40,398	$ 119,598	$ 144,598

(1) Each $1.00 increase or decrease in the assumed initial public offering price of $11.00 per combination would increase or decrease, respectively, the amount of cash, additional paid-in capital and total capitalization by approximately $7.4 million, $6.2 million and $7.4 million, respectively, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering costs payable by us. Similarly, an increase or decrease of 1.0 million shares from the expected number of shares to be sold in this offering, assuming no change in the assumed initial public offering price per combination, would increase or decrease, respectively, the amount of cash, additional paid-in capital and total capitalization by approximately $10.2 million, $8.5 million and $10.2 million, respectively, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(2) As of February 28, 2013, our cash was approximately $19.6 million. The decrease was primarily due to operating expenses and was partially offset by receipt of approximately $0.2 million in additional governmental loans in the period between December 31, 2012 and February 28, 2013.

(3) We expect our long-term debt to increase as we draw down on governmental loans related to our planned facility in Sarnia. As of February 28, 2013, long-term debt, including current portion was approximately $2.7 million. The increase was primarily due to receipt of additional governmental loans. See Business Manufacturing Operations Governmental Grants and Loans Related to Sarnia Facility and Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources.

(4) The fair value of the warrants has been classified as a financial liability as a result of their characteristics, in accordance with FASB ASC 815. See the section entitled Description of Securities Warrants Being

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Issued in this Offering for additional information about the warrants. The value of the warrants being issued in this offering were determined using the Black-Scholes option pricing model with the following assumptions:

Risk-free interest rate	0.34%
Expected life	3 years
Volatility	47.01%
Expected dividend yield	0%
Forfeiture rate	0%

(5) As of February 28, 2013, total stockholders equity was approximately $33.2 million. The decrease from December 31, 2012 is primarily related to a net operating loss of approximately $5.2 million during the period from January 1, 2013 through February 28, 2013.

The number of shares of our common stock to be outstanding after this offering is based on 10,412,815 shares of our common stock outstanding as of December 31, 2012, which gives effect to the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders (see note 23 to our consolidated financial statements), and excludes:

2,072,000 shares of our common stock issuable upon exercise of outstanding stock options as of December 31, 2012 at a weighted average exercise price of $10.89 per share;

1,457,855 shares of common stock issuable upon the exercise of outstanding warrants as of December 31, 2012 at a weighted average exercise price of $2.70 per share;

49,000 shares of our common stock reserved as of December 31, 2012 for future issuance under our 2008 Stock Incentive Plan;

3,682,563 shares of our common stock reserved for future issuance under our 2013 Stock Option and Incentive Plan, which will become effective upon the completion of this offering, as more fully described in Executive and Director Compensation 2013 Stock Option and Incentive Plan; and

4,000,000 shares of common stock issuable upon the exercise of the warrants to be sold in this offering.

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DILUTION

If you invest in our common stock and warrants, your investment will be diluted immediately to the extent of the difference between the initial public offering price per share of our common stock and exercise price per warrant in this offering and the net tangible book value per share of our common stock immediately after completion of this offering. Dilution results from the fact that the initial public offering price is substantially in excess of the book value per share attributable to the existing stockholders for the presently outstanding stock.

Our historical net tangible book value as of December 31, 2012, was approximately $24.1 million, or $2.33 per share, based on 10,349,815 shares of common stock outstanding as of December 31, 2012. Historical net tangible book value per share is determined by dividing our total tangible assets less total liabilities by the actual number of issued and outstanding shares of our common stock. Our pro forma net tangible book value as of December 31, 2012 was approximately $24.0 million, or approximately $2.30 per share, based on 10,412,815 shares of common stock issued and outstanding after giving effect to the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders pursuant to a Termination and Release Agreement (see note 23 to our consolidated financial statements).

After giving effect to our sale of 8,000,000 shares of common stock and warrants to purchase 4,000,000 shares of our common stock in this offering based on an assumed initial public offering price of $11.00 per combination, which represents the mid-point of the estimated price range set forth on the cover of the prospectus, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma net tangible book value as of December 31, 2012 would have been $4.84 per share. This represents an immediate increase in pro forma net tangible book value per share of $2.54 to existing stockholders and immediate dilution in pro forma net tangible book value of $6.16 per share to new investors purchasing our common stock and warrants in this offering at the initial public offering price. Dilution per share to new investors is determined by subtracting pro forma net tangible book value per share after this offering from the assumed initial public offering price paid by a new investor. The following table illustrates the per share dilution without giving effect to the option granted to the underwriters:

Assumed initial public offering price per combination(1)		$ 11.00
Pro forma net tangible book value per share as of December 31, 2012	$ 2.30	
Increase per share attributable to new investors	2.54	
Pro forma net tangible book value per share after this offering		4.84
Dilution per share to new investors		$ 6.16

(1) The mid-point of the estimated price range set forth on the cover page of this prospectus.

A $1.00 increase (decrease) in the assumed initial public offering price of $11.00 per combination (the mid-point of the price range set forth on the cover page of this prospectus) would increase (decrease) the pro forma net tangible book value per share after this offering by approximately $0.34 per share and the dilution in pro forma per share to investors participating in this offering by approximately $0.66 per share, assuming that the number of shares and warrants offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, a one million share increase (decrease) in the number of shares and warrants offered by us, as set forth on the cover of this prospectus, would increase (decrease) the pro forma net tangible book value per share after this offering by approximately $0.19 per share and the dilution in pro forma per share to investors participating in this offering by approximately $0.19 per share, assuming the assumed initial public offering price of $11.00 per combination (the mid-point of the price range set forth on the cover of this prospectus) remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option in full to purchase additional shares of our common stock and warrants in this offering, the pro forma as adjusted net tangible book value will increase to $99.4 million

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representing an immediate increase to existing stockholders of $0.23 per share and an immediate dilution of $0.23 per share to new investors participating in this offering.

The following table summarizes as of December 31, 2012, the number of shares of our common stock purchased or to be purchased from us, the total cash consideration paid or to be paid to us and the average price per share paid or to be paid to us by existing stockholders and by new investors in this offering at an assumed initial public offering price of $11.00 per combination, which represents the mid-point of the estimated price range set forth on the cover page of this prospectus, before deducting underwriting discounts and commissions and estimated offering expenses payable by us. As the table below shows, new investors participating in this offering will pay an average price per share substantially higher than our existing stockholders paid.

	Shares Purchased		Total Consideration		Average Price per Share
(In thousands except share and average price per share numbers)	Number	Percent	Amount	Percent	
Existing stockholders	10,412,815	57%	$ 100,162	58%	$ 9.62
New investors	8,000,000	43%	73,939	42%	9.24
Total	18,412,815	100%	$ 174,101	100%	

A $1.00 increase (decrease) in the assumed initial public offering price of $11.00 per combination (the mid-point of the price range set forth on the cover page of this prospectus) would increase (decrease) the total consideration paid by new investors, total consideration paid by all stockholders and the average price per share paid by all stockholders by approximately $8 million, $8 million and $0.84 per share, respectively, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, a one million share increase (decrease) in the number of shares offered by us, as set forth on the cover of this prospectus, would increase (decrease) the total consideration paid by new investors, total consideration paid by all stockholders and the average price per share paid by all stockholders by approximately $11 million, $11 million and $1.16 per share, respectively, assuming the assumed initial public offering price of $11.00 per combination (the mid-point of the price range set forth on the cover of this prospectus) remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option in full to purchase additional 1,200,000 shares of our common stock in this offering, the percentage of shares of our common stock held by existing stockholders will be reduced to 53% of the total number of shares of common stock to be outstanding after this offering, and the number of shares of common stock held by investors participating in this offering will be further increased to 9,200,000, or 47% of the total number of shares of common stock to be outstanding after this offering.

The above discussion and tables are based on 10,412,815 shares of our common stock outstanding as of December 31, 2012, which gives effect to the release of 63,000 shares of our common stock and the forfeiture of 7,000 shares of our common stock in exchange for $140,000, which were held in escrow on behalf of Sinoven s selling shareholders (see note 23 to our consolidated financial statements), and exclude:

- 2,072,000 shares of our common stock issuable upon exercise of outstanding stock options as of December 31, 2012 at a weighted average exercise price of $10.89 per share;
- 1,457,855 shares of common stock issuable upon the exercise of outstanding warrants as of December 31, 2012 at a weighted average exercise price of $2.70 per share;
- 49,000 shares of our common stock reserved as of December 31, 2012 for future issuance under our 2008 Stock Incentive Plan;
- 3,682,563 shares of our common stock reserved for future issuance under our 2013 Stock Option and Incentive Plan, which will become effective upon the completion of this offering, as more fully described in Executive and Director Compensation 2013 Stock Option and Incentive Plan; and

4,000,000 shares of common stock issuable upon the exercise of the warrants to be sold in this offering.

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To the extent that outstanding stock options, warrants or other equity awards are exercised or become vested or any additional options, warrants or other equity awards are granted and exercised or become vested or other issuances of shares of our common stock are made, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities may result in further dilution to our stockholders.

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SELECTED CONSOLIDATED FINANCIAL DATA

The following table presents our selected consolidated financial data for the periods indicated. In 2010, we changed our fiscal year end from June 30 to December 31. The consolidated statements of operations data for the year ended June 30, 2010, the six months ended December 31, 2010 and the years ended December 31, 2011 and 2012 are derived from our audited consolidated financial statements that are included elsewhere in this prospectus. The table below also presents cumulative data since October 15, 2008 (date of inception) for the periods indicated.

Historical results are not necessarily indicative of the results for future periods and results of interim periods are not necessarily indicative of results for the entire year. You should read this summary consolidated financial data in conjunction with the sections entitled Prospectus Summary Our Corporate Information and Management s Discussion and Analysis of Financial Condition and Results of Operations in this prospectus and our consolidated financial statements and the related notes included elsewhere in this prospectus.

Consolidated Statement of Operations Data:

	12 Months ended June 30, 2010	6 Months ended December 31, 2010	12 Months ended December 31, 2011	12 Months ended December 31, 2012	Cumulative data Inception to December 31, 2012
	(in thousands, except share and per share data)				
Revenues					
Licensing revenue from related parties(1)	$ 966	$ 75	$	$	$ 1,301
Product sales			560	2,291	2,851
Total revenues	966	75	560	2,291	4,152
Cost of goods sold			837	1,746	2,583
Gross profit (loss)	966	75	(277)	545	1,569
Operating expenses					
General and administrative	1,543	1,590	6,776	11,665	22,226
Research and development, net(2)	1,458	4,841	16,717	20,417	43,837
Sales and marketing	59	103	2,471	4,193	6,826
Depreciation of property and equipment and amortization of intangible assets	484	264	522	2,116	3,648
Impairment loss and write-off of intangible assets				1,213	1,342
Foreign exchange (gain) loss	121	(26)	99	50	253
Operating expenses	3,665	6,772	26,585	39,654	78,132
Operating loss	2,699	6,697	26,862	39,109	76,563
Amortization of deferred financing costs and debt discounts	157	2	12	100	286
Financial charges(3)	962	155	3,870		5,643
Interest revenue from related parties	(89)	(73)			(162)
Income taxes			108	55	(737)
Equity participation in losses of equity method investments(4)	4,340	1,548		274	7,047
Gain on re-measurement of Bioamber S.A.S.(4)		(6,216)			(6,216)
Net loss	$ 8,069	$ 2,113	$ 30,852	$ 39,538	$ 82,424
Net loss attributable to:					

BioAmber Inc. shareholders	$ 7,992	$ 2,011	$ 30,621	$ 39,351	$ 81,826
Non-controlling interest	77	102	231	187	598
	$ 8,069	$ 2,113	$ 30,852	$ 39,538	$ 82,424
Net loss per share attributable to BioAmber Inc. shareholders basic(5)	$ 2.75	$ 0.45	$ 3.89	$ 3.82	
Weighted-average of common shares outstanding basic	2,905,876	4,497,258	7,864,371	10,296,633	

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(1) Consists of licensing fees charged to Bioamber S.A.S. prior to our acquisition of control of Bioamber S.A.S. effective October 1, 2010.
(2) Research and development expenses include some costs of production related to product development and are net of research and development tax credits.
(3) Financial charges consist primarily of accreted interest on convertible notes we issued in June 2009 and November 2010 and which were subsequently converted to shares of common stock. Financial charges also include the recording of the increases in fair value of contingent consideration in connection with the acquisition of Sinoven and held in escrow until September 30, 2011. This escrow was modified on October 1, 2011 when we acquired the remaining 25% of Sinoven and on March 1, 2013 pursuant to entering into a Termination and Release Agreement.
(4) Until October 1, 2010, when we took control of Bioamber S.A.S., we recorded our share of Bioamber S.A.S. s losses in excess of the investment s book value. Upon completion of our acquisition of Bioamber S.A.S., the 50% held equity interest, net of long-term accounts receivable from Bioamber S.A.S., was re-measured to its estimated fair value resulting in a gain of $6,216,000 in the six months ended December 31, 2010. See note 4 to our consolidated financial statements included elsewhere in this prospectus.
(5) We have incurred losses in each period since inception; accordingly, diluted loss per share is not presented.

Consolidated Balance Sheet Data:

	As of December 31, 2011	As of December 31, 2012
	(in thousands)	
Cash	$ 47,956	$ 25,072
Working capital	44,910	22,162
Total assets	68,096	50,004
Long-term debt, including current portion	255	2,600
Total liabilities	8,681	12,206
Accumulated deficit	(42,475)	(81,826)
Shareholders equity	59,415	37,798

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

The following discussion and analysis of our financial condition and results of operations should be read together with our consolidated financial statements and the related notes and the other financial information included elsewhere in this prospectus. This discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those discussed below and elsewhere in this prospectus, particularly those in the section entitled Risk Factors.

Overview

We are a next-generation chemicals company. Our proprietary technology platform combines industrial biotechnology and chemical catalysis to convert renewable feedstocks into sustainable chemicals that are cost-competitive replacements for petroleum-derived chemicals. We currently sell our first product, bio-succinic acid, to customers in a variety of chemical markets. We intend to produce bio-succinic acid that is cost-competitive with succinic acid produced from petroleum at our planned facility in Sarnia, Ontario, which we plan to build pursuant to a joint venture agreement with Mitsui. We currently produce our bio-succinic acid in a large-scale demonstration facility using a 350,000 liter fermenter in Pomacle, France, which we believe to be among the largest bio-based chemical manufacturing facilities in the world. We have produced over 1.25 million pounds, or 568 metric tons, of bio-succinic acid at this facility from inception to December 31, 2012. We sold approximately 144,500 pounds and 356,900 pounds of bio-succinic acid to our customers during the years ended December 31, 2011 and 2012, respectively.

We believe we can produce bio-succinic acid that is cost-competitive with succinic acid produced from oil priced as low as $35 per barrel, based on management s estimates of production costs at our planned facility in Sarnia, Ontario and an assumed corn price of $6.50 per bushel. While we can provide no assurance that we will be able to secure corn at $6.50 per bushel given the fluctuations in corn prices, we believe this assumption is reasonable given the historic price of corn and management s expectations as to their ability to manage the cost of corn and other inputs for our planned facility in Sarnia, Ontario. Over the past five years, the price of corn ranged from a low of $2.68 per bushel to a high of $8.44 per bushel. As of April 1, 2013, the spot price was $6.55 per bushel and the six month forward price was $5.51 per bushel. We estimate that a $1.00 increase or decrease in the per bushel price of corn would result in just a $0.024 per pound change in the variable cost of our bio-succinic acid. We expect the productivity of our yeast and on-going process improvements to further reduce our production costs. Our ability to compete on cost is not dependent on government subsidies or tariffs. We intend to build our first facility in cooperation with Mitsui in Sarnia, Ontario. We expect this facility to be mechanically complete in 2014, at which time we plan to begin commissioning and start-up. We also intend to build and operate two additional facilities over the next three to four years. Our manufacturing expansion strategy is described below under the heading Manufacturing Expansion Plan.

We have been manufacturing our bio-succinic acid at a large-scale demonstration facility in Pomacle, France for over three years. In 2011, in connection with our product and market development efforts, we sold 144,500 pounds, or 66 metric tons, of our bio-succinic acid to 14 customers. During the year ended December 31, 2012, we sold 356,900 pounds, or 161 metric tons, of our bio-succinic acid to 16 customers. We shipped commercial quantities to these customers, such as shipments of one ton super sacks and container loads. We and our customers used the products produced at the facility as part of our efforts to validate and optimize our process and to continue to refine and improve our bio-succinic acid to meet our customers specifications. We expect to move from a development stage enterprise to a commercial enterprise as our planned principal operations begin in the Sarnia, Ontario facility.

As we scale-up our manufacturing capacity and prepare to manufacture and commercialize, we expect the majority of our revenue will initially come from sales of bio-succinic acid. We also intend to leverage our proprietary technology platform and expertise in the production of bio-succinic acid to target additional high

value-added products, such as bio-based 1,4 BDO, bioplastics, de-icing solutions and plasticizers. In addition, we are also working to expand our product portfolio to additional building block chemicals, including adipic acid and caprolactam.

Since our inception, we have raised an aggregate of $89.0 million from private placements of equity securities, shares issued by a subsidiary and convertible notes.

In connection with certain of our material license and development agreements related to our technology and our product pipeline, we have made the following payments and are obligated to make the following milestone payments:

- Under our commercial license agreement with Cargill entered into in April 2010, we have paid no up-front, annual or royalty payments to date.

- Under our development agreement with Cargill entered into concurrently with the license agreement, we have paid $250,000 in up-front, annual or royalty payments to date. The agreement also contains three milestone payments totaling approximately $1,050,000 that are payable after each milestone is completed. The first two milestones have been completed and were paid and we expect to complete the third milestone and record the related $500,000 milestone payment in 2013.

- Under our technology license agreement with Celexion entered into in September 2010, we have paid $275,000 in up-front, annual and royalty payments to date. The agreement also contains milestone payments totaling $2.0 million, a portion of which is payable after each milestone is completed.

- Under our license agreement with DuPont entered into in June 2010, we have paid $375,000 in up-front, annual and royalty payments to date.

- Under our exclusive commercial patent license agreement with UT-Battelle and UChicago Argonne entered into in 2009, we have paid $682,500 in up-front, annual and royalty payments to date.

- Under our license agreement with NatureWorks entered into in February 2012, we have received no royalty payments to date nor have we had to make any royalty payments to date.

The material terms of the agreements set forth above are described in detail in the section entitled Business Our Technology Technology Partnerships.

Manufacturing Expansion Plan

In order to support our growth, we plan to rapidly expand our manufacturing capacity beyond the current production at the large-scale demonstration facility we operate in Pomacle, France. We have entered into a joint venture with Mitsui to finance, build and operate a manufacturing facility in Sarnia, Ontario through our BioAmber Sarnia subsidiary in which we own a 70% equity interest and Mitsui owns the remaining 30%. The joint venture agreement also establishes our intent to build and operate two additional facilities with Mitsui, which we expect to occur over the next three to four years. For future facilities, we expect to enter into agreements with partners on terms similar to those in our agreement with Mitsui and we intend to partially finance these facilities with debt. We expect to fund the initial phase of our planned facility in Sarnia, Ontario using available cash, a portion of the net proceeds of this offering, equity from our partner Mitsui, low-interest loans, government grants and our proposed credit facility with HTGC, the proposed terms and conditions of which are described in the section below entitled Liquidity and Capital Resources. For additional future facilities, we currently expect to fund the construction of these facilities using internal cash flows and project financing.

Sarnia Facility

The first facility we plan to build in cooperation with Mitsui will be located in a bio-industrial park in Sarnia, Ontario. We have commenced engineering and substantially completed permitting for this facility and the initial phase is expected to be mechanically complete in 2014, at which time we plan to begin commissioning and start-up. The facility will be constructed to have an initial projected capacity of 30,000 metric tons of bio-succinic acid and could subsequently be expanded to produce another 20,000 metric tons of bio-succinic acid. A portion of our aggregate

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capacity could be further converted to produce bio-based 1,4 BDO. As an example, we estimate that approximately 30,000 metric tons of bio-succinic acid production could be converted into approximately 22,000 metric tons of bio-based 1,4 BDO production. Completion of this initial phase of our planned facility in Sarnia is expected to cost approximately $125.0 million, which we plan to fund through capital contributions of $63.0 million and $27.0 million from us and from Mitsui, respectively, and an additional CAD $35.0 million in low-interest loans and governmental grants that have been committed, subject to our meeting certain milestones, by various governmental authorities in Canada. The milestones vary depending on the government grant or loan. We have received loan proceeds in the amount of CAD $5.3 million and grant proceeds in the amount of CAD $5.0 million. We are also in discussions with Canadian government agencies for approximately CAD $25.0 million in additional low-interest loans, which would reduce our and Mitsui s capital contributions to $45.5 million and $19.5 million respectively. Our loans and government grants are further described under Business Manufacturing Operations Government Grants and Loans Related to Sarnia Facility. We intend to enter into a proposed credit facility subsequent to the closing of this offering with Hercules Technology Growth Capital and its affiliates and assignees, or HTGC, pursuant to which HTGC is expected to make available to us term loans in an aggregate principal amount of up to $25.0 million to fund our initial planned facility in Sarnia, Ontario. The terms and conditions of this proposed credit facility are described in the section below entitled Liquidity and Capital Resources.

We intend to complete the second phase of our planned facility in Sarnia by 2016, which entails increasing the capacity of the plant by an additional 20,000 metric tons of bio-succinic acid. This expansion is estimated to cost approximately $31.0 million of which we expect to contribute a maximum amount of approximately $21.7 million. Our portion could be reduced by project financing or by obtaining low-interest loans, government grants similar to those we have obtained for the initial construction phase.

Additional Facilities

Our agreement with Mitsui contemplates the potential construction and operation of two additional manufacturing facilities. We expect these facilities to produce bio-based 1,4 BDO, tetrahydrofuran, or THF, and/or gammabutyrolactone, or GBL, with the exact ratio of such end products being a function of the demand we secure. We anticipate that Mitsui will be an equity partner in these facilities, but we may also secure other minority partners and may also seek low interest loans and government grants to fund the facility, which would substantially reduce our equity funding requirement. Based on current estimates and assumptions, we expect our second manufacturing facility to have a projected initial bio-based 1,4 BDO / GBL capacity in the range of 50,000 to 100,000 metric tons, construction costs of approximately $210.0 million to $330.0 million, and be mechanically complete in 2016 or 2017.

In addition to the facilities we plan to build in cooperation with Mitsui, we have entered into a non-binding letter of intent with Tereos, a leading European feedstock producer, for joint construction of two additional facilities.

Our business strategy is to leverage the value of our technology by building and operating production facilities around the world. However, depending on our access to capital and third-party demand for our technology, we may also enter into technology licenses on an opportunistic basis.

Performance Drivers

We expect that the fundamental drivers of our results of operations going forward will be the following:

Commercialization of our products. We commenced recognizing revenue from sales of our existing bio-succinic acid product in 2011. In 2012, we increased revenue from the sale of our bio-succinic acid from $560,000 in 2011 to $2.3 million. Our ability to further grow revenue from this product will be dependent on expanding the addressable market for succinic acid using our low-cost, bio-based alternative. We also expect to grow our revenue base by developing new high value-added products, such as bio-based 1,4 BDO, bioplastics

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and plasticizers, in order to target additional large and established chemicals markets. Our revenue for future periods will also be impacted by our ability to introduce new products and the speed with which we are able to bring our products to market. To accelerate this process, we are developing our sales and marketing capability and entering into distribution and joint development agreements with strategic partners. We are also engaging in a collaborative process with our customers to test and optimize our new products in order to ensure that they meet specifications in each of their potential applications.

Production capacity. Our ability to further lower our production costs and drive customer adoption of our product is dependent on our manufacturing expansion strategy. In particular, in our planned facility in Sarnia, Ontario, we expect to benefit from significantly lower operating expenses than those in the large-scale demonstration facility in Pomacle, France due to lower expected raw material, utility and other costs. For example, we project that during 2013 our costs of glucose from wheat used in the large-scale demonstration facility we operate in Pomacle, France will be 270% higher than the expected costs of glucose from corn wet millers to be used in our planned facility in Sarnia, Ontario. We project our cost of steam in Pomacle, France will be 651% higher than the expected cost in Sarnia, Ontario. We also project direct labor costs, electricity costs and other raw material costs in Pomacle, France will be higher than in Sarnia, Ontario. If we were to adjust the current costs of goods sold in the large-scale demonstration facility we operate in Pomacle, France for the lower expected raw material and utility costs, the economies of scale and the engineering design improvements we have incorporated into our planned facility in Sarnia, Ontario, our gross profit from products sold would increase significantly. As a result, we expect to produce bio-succinic acid that is cost-competitive with succinic acid produced from oil priced as low as $35 per barrel. We expect to further reduce costs by transitioning from our *E. coli* to our yeast and by implementing on-going process improvements. We intend to capitalize on our first-to-market advantage by rapidly expanding our production capacity and building additional facilities. Our results will be impacted by the speed with which we execute on this strategy and the capital costs and operating expenses of each of these facilities.

Feedstock and other manufacturing input prices. We use sugars that can be derived from wheat, corn and other feedstocks. We intend to locate our facilities near readily available sources of sugars and other inputs, such as steam, electricity, hydrogen and carbon dioxide, in order to ensure reliable supply of cost-competitive feedstocks and utilities. While our process requires less sugar than most other renewable products and is therefore less vulnerable to sugar price increases relative to other bio-based processes, our margins will be affected by significant fluctuations in these required inputs.

Petroleum prices. We expect sales of our bio-based products to be impacted by the price of petroleum. In the event that petroleum prices increase, we may see increased demand for our products as chemical manufacturers seek lower-cost alternatives to petroleum-derived chemicals. Conversely, a long-term reduction in petroleum prices below $35 per barrel may result in our products being less competitive with petroleum-derived alternatives. In addition, oil prices may also impact the cost of certain feedstocks we use in our process, which may affect our margins.

Financial Operations Overview

Revenue

Revenue comprises the fair value of the consideration received or receivable for the sale of products and services in the ordinary course of our activities and is presented net of discounts.

Licensing revenue from related parties was derived from services rendered to Bioamber S.A.S. Following our acquisition of Bioamber S.A.S. on and after September 30, 2010, licensing revenue from related parties is eliminated upon consolidation.

We recognized $2.3 million and $560,000 of revenue from sales of bio-succinic acid during the years ended December 31, 2012 and 2011, respectively. Supply contracts generated $2.0 million and $427,000 of these revenues during the years ended December 31, 2012 and 2011, respectively. Non-contracted sales generated $338,000 and

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$133,000 of these revenues during the years ended December 31, 2012 and 2011, respectively. We expect these revenues to grow as our sales and marketing efforts continue and our planned facility in Sarnia, Ontario reaches the stage of being mechanically complete in 2014, at which time we will begin commissioning and start-up.

Cost of goods sold

Cost of goods sold consists of the cost to produce finished goods at the large-scale demonstration facility in Pomacle, France under a tolling arrangement. Cost of goods sold increased from $837,000 for the year ended December 31, 2011 to $1.7 million for the year ended December 31, 2012 due to an increase in the quantity of product sold, which was partially offset by a reduction in the production costs per unit. Going forward, we expect our cost of goods sold as a percent of revenues to decrease as we increase volumes produced, transition from a development stage entity to a full scale commercial enterprise and benefit from efficiencies in utilizing our yeast in our fermentation process.

Operating Expenses

Operating expenses consist of general and administrative expenses, research and development expenses, net, sales and marketing expenses, depreciation of property and equipment and amortization of intangible assets, impairment losses and foreign exchange gains and losses.

General and Administrative Expenses

General and administrative expenses consist of personnel costs (salaries, and other personnel-related expenses, including stock-based compensation), recruitment and relocation expenses, accounting and legal fees, business travel expenses, rent and utilities for the administrative offices, web site design, press releases, membership fees, office supplies, insurance and other miscellaneous expenses.

Our general and administrative expenses have increased and we expect these expenses will continue to increase substantially in the future as we hire additional management and operational employees, expand our finance and accounting staff, add infrastructure and incur additional compliance and related costs associated with being a public company.

Research and Development Expenses, Net

Research and development expenses, net consist primarily of fees paid for contract research and internal research costs in connection with the development, expansion and enhancement of our proprietary technology platform. These costs also include personnel costs (salaries and other personnel-related expenses, including stock-based compensation), expenses incurred in our facility located in Plymouth, Minnesota, laboratory supplies, research consultant costs, patent and trademark maintenance costs, royalties, professional and consulting fees and business travel expenses.

We expect research and development expenses, including our patent maintenance expenses, to increase significantly as we continue to invest in the deployment and implementation of our bio-succinic acid and derivatives technologies in a commercial scale manufacturing facility. We expect more research to be performed in-house than was previously the case by utilizing our 27,000 square feet facility in Plymouth, Minnesota. In support of our efforts to move more research in-house we added 10 additional research and development personnel resulting in a total of 20 research and development staff at the end of 2012.

Sales and Marketing Expenses

Sales and marketing expenses consist primarily of personnel costs (salaries, and other personnel-related expenses, including stock-based compensation), marketing services, product development costs, advertising and feasibility study fees.

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We expect to increase our sales and marketing efforts as we look to establish additional strategic alliances, grow our commercial customer base and expand our product offerings. As we transition from a developmental stage company and commence commercial operations, we expect to significantly increase our sales and marketing personnel and programs to support the expected expansion of our business.

Depreciation of Property and Equipment and Amortization of Intangible Assets

Depreciation of property and equipment consists primarily of the depreciation of our office furniture and computer equipment, which is depreciated using the straight-line method over their estimated useful lives. Amortization of intangible assets consists primarily of the amortization of certain in-process research and development acquired technology, patents and technology licenses, which are amortized using the straight-line method over their estimated useful lives.

We expect depreciation of property and equipment to increase significantly as our planned manufacturing facilities are put in to use. During 2012, we received $6.7 million in government grants and loans in relation to our planned facility in Sarnia, Ontario, of which $3.0 million was applied at year-end to reduce the cost of construction in progress. This will result in reduced depreciation expense over the useful life of the asset.

As of January 1, 2012, a portion of acquired in-process research and development from the acquisition of Bioamber S.A.S. was deemed to be substantially complete. The related intangible asset was no longer considered to have an indefinite life and is being amortized over a five year useful life. We expect amortization of intangible assets to increase as our acquired in-process research and development is deemed to be substantially complete at a future date. At that time we will start to amortize the assets using the straight-line method over their estimated useful lives.

Impairment Loss and Write-off of Intangible Assets

Impairment loss and write-off of intangible assets includes impairment losses related to intellectual property (patents and in-process research and development). As we develop and deploy new technologies in our production processes, old technologies may become obsolete and may need to be written-off.

Foreign Exchange (Gain) Loss

We expect to conduct operations throughout the world. Our financial position and results of operations will be affected by economic conditions in countries where we plan to operate and by changing foreign currency exchange rates. We are exposed to changes in exchange rates in Europe and Canada. The Euro and the Canadian dollar are our most significant foreign currency exchange risks. A strengthening of the Euro and the Canadian dollar against the U.S. dollar may increase our revenues and expenses since they are expressed in U.S. dollars. As we move our production to our planned facility in Sarnia, Ontario we expect our foreign currency risk to decrease as our sources and uses of cash will be primarily in U.S. dollars. We will monitor foreign currency exposures and will look to mitigate exposures through normal business operations such as manufacturing and selling in the same currencies.

Amortization of Deferred Financing Costs and Debt Discounts

Amortization of deferred financing costs consists primarily of costs from past financings that were recognized over the life of the funding instrument and will continue to increase in line with the expenses incurred to obtain future financing. Costs are deferred and amortized on a straight-line basis over the term of the related debt.

In addition, amortization of deferred financing costs includes the debt discount on the loans received from the Sustainable Chemistry Alliance and the Federal Economic Development Agency for Southern Ontario as the loans bear a below market interest rate and a zero interest rate, respectively.

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Financial Charges

Financial charges consist primarily of accreted interest resulting from warrants attached to the convertible notes issued in June 2009 and November 2010. Financial charges also include the recording of the fair value of the contingent share consideration in connection with the acquisition of Sinoven and held in escrow until September 30, 2011. The terms of the escrow were modified on October 1, 2011 when we acquired the remaining 25% of Sinoven. See notes 5 and 23 to our consolidated financial statements included elsewhere in this prospectus.

Income Taxes

We are subject to income taxes in France, Luxembourg, the United States, Canada and China. As a development stage company we have incurred significant losses and have not generated taxable income in these jurisdictions. In the future, we expect to become subject to taxation based on the statutory rates in effect in the countries we operate and our effective tax rate could fluctuate accordingly. We have incurred net losses since our inception and have not recorded any federal, state or foreign current income tax provisions other than for unrecognized tax benefits in the years ended December 31, 2011 and 2012, and a recovery of income taxes in the 258 day period ended June 30, 2009. We have a full valuation allowance against our net deferred tax assets. Additionally, under the U.S. Internal Revenue Code, our net operating loss carryforwards and tax credits may be limited if a cumulative change in ownership of more than 50% is deemed to have occurred within a three year period. We have not performed a detailed analysis to determine whether an ownership change under Section 382 of the Internal Revenue Code has occurred after each of our previous issuances of shares of common stock and warrants.

Equity Participation in Losses of Equity Method Investments

Equity participation in losses of equity method investments consist primarily of our share of losses incurred by Bioamber S.A.S. and AmberWorks LLC. We recognized our 50% share of losses incurred by Bioamber S.A.S. from the date of the spin-off transaction on December 31, 2008 and until we acquired full control on September 30, 2010. We started fully consolidating the results of Bioamber S.A.S. into our financial statements on October 1, 2010. We also recognized $274,000, or our 50% share of losses incurred by AmberWorks LLC, from the date the joint venture was formed on February 15, 2012, during the year ended December 31, 2012.

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Results of Operations

The following table sets forth our consolidated results of operations for the periods presented:

	12 Months ended June 30, 2010	6 Months ended December 31, 2010	12 Months ended December 31, 2011	12 Months ended December 31, 2012	Cumulative data Inception to December 31, 2012
	(in thousands, except share and per share data)				
Revenues					
Licensing revenue from related parties	$ 966	$ 75	$	$	$ 1,301
Product sales			560	2,291	2,851
Total revenues	966	75	560	2,291	4,152
Cost of goods sold			837	1,746	2,583
Gross profit (loss)	966	75	(277)	545	1,569
Operating expenses					
General and administrative	1,543	1,590	6,776	11,665	22,226
Research and development, net	1,458	4,841	16,717	20,417	43,837
Sales and marketing	59	103	2,471	4,193	6,826
Depreciation of property and equipment and amortization of intangible assets	484	264	522	2,116	3,648
Impairment loss and write-off of intangible assets				1,213	1,342
Foreign exchange (gain) loss	121	(26)	99	50	253
Operating expenses	3,665	6,772	26,585	39,654	78,132
Operating loss	2,699	6,697	26,862	39,109	76,563
Amortization of deferred financing costs and debt discounts	157	2	12	100	286
Financial charges	962	155	3,870		5,643
Interest revenue from related parties	(89)	(73)			(162)
Income taxes			108	55	(737)
Equity participation in losses of equity method investments	4,340	1,548		274	7,047
Gain on re-measurement of Bioamber S.A.S.		(6,216)			(6,216)
Net loss	$ 8,069	$ 2,113	$ 30,852	$ 39,538	$ 82,424
Net loss attributable to:					
BioAmber Inc. shareholders	$ 7,992	$ 2,011	$ 30,621	$ 39,351	$ 81,826
Non-controlling interest	77	102	231	187	598
	$ 8,069	$ 2,113	$ 30,852	$ 39,538	$ 82,424
Net loss per share attributable to BioAmber Inc. shareholders basic (1)	$ 2.75	$ 0.45	$ 3.89	$ 3.82	
Weighted-average of common shares outstanding basic	2,905,876	4,497,258	7,864,371	10,296,633	

(1) We have incurred losses in each period since inception; accordingly, diluted loss per share is not presented.

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Comparison of Year Ended December 31, 2011 and Year Ended December 31, 2012

The following table shows the amounts of the listed items from our consolidated statements of operations for the periods presented, showing period-over-period changes:

	12 months ended December 31, 2011	12 months ended December 31, 2012 (in thousands)	$ Increase (decrease)
Revenues			
Licensing revenue from related parties	$	$	$
Product sales	560	2,291	1,731
Total revenues	560	2,291	1,731
Cost of goods sold	837	1,746	909
Gross profit (loss)	(277)	545	822
Operating expenses			
General and administrative	6,776	11,665	4,889
Research and development, net	16,717	20,417	3,700
Sales and marketing	2,471	4,193	1,722
Depreciation of property and equipment and amortization of intangible assets	522	2,116	1,594
Impairment loss and write-off of intangible assets		1,213	1,213
Foreign exchange (gain) loss	99	50	(49)
Operating expenses	26,585	39,654	13,069
Operating loss	26,862	39,109	12,247
Amortization of deferred financing costs and debt discounts	12	100	88
Financial charges	3,870		(3,870)
Interest revenue from related parties			
Income taxes	108	55	(53)
Equity participation in losses of equity method investments		274	274
Gain on re-measurement of Bioamber S.A.S.			
Net loss	$ 30,852	$ 39,538	$ 8,686
Net loss attributable to:			
BioAmber Inc. shareholders	$ 30,621	$ 39,351	$ 8,730
Non-controlling interest	231	187	(44)
	$ 30,852	$ 39,538	$ 8,686

Product sales

Product sales increased from $560,000 for the year ended December 31, 2011 to $2,291,000 for the year ended December 31, 2012 due to a 147% increase in the quantity of product sold and an increase in the average selling price of product in local currency (Euros). For the year ended December 31, 2012, we sold 356,900 pounds, or 161 metric tons, of bio-succinic acid to our customers versus 144,500 pounds, or 66 metric tons, during the year ended December 31, 2011.

Supply contracts generated $427,000 and $1,953,000 for the years ended December 31, 2011 and 2012, respectively. Non-contracted sales generated $133,000 and $338,000 of these revenues for the years ended December 31, 2011 and 2012, respectively.

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Cost of goods sold

Cost of goods sold increased from $837,000 for the year ended December 31, 2011 to $1,746,000 for the year ended December 31, 2012 due to an increase in the quantity of product sold, which was partially offset by a reduction in the production costs per unit. A portion of our sales in 2011 were of product produced in prior periods, which had a cost basis of zero. The cost of the product was expensed as part of our research and development efforts.

General and administrative expenses

General and administrative expenses increased by $4.9 million to $11.7 million for the year ended December 31, 2012 as compared to $6.8 million for the year ended December 31, 2011. The increase is primarily due to expensing, in the third quarter of 2012, of $3.1 million of financing costs associated with our planned initial public offering that were deferred over the previous twelve months. These financing costs mainly consisted of legal, accounting and printing fees and were recognized in the current period as the initial public offering was delayed for greater than 90 days. In addition, salaries and benefits increased by $838,000 as a result of increases in headcount and salaries. The stock-based compensation expense attributable to administrative staff increased by $865,000 due to new stock options being granted as signing bonuses. The increase was also due to increases in legal fees of $32,000, insurance expenses of $163,000 and rent expenses of $39,000, which are all in line with our expansion strategy.

Research and development expenses, net

Research and development expenses, net, increased by $3.7 million to $20.4 million for the year ended December 31, 2012 as compared to $16.7 million for the year ended December 31, 2011. This was driven primarily by the increase in personnel costs, which resulted from hiring additional personnel to continue our research and development of bio-succinic acid, bio-based 1,4 BDO, and adipic acid. Salaries and benefits increased by $2.3 million due to the increase in headcount. The stock based compensation expense attributable to research and development staff increased by $2.8 million due to new stock options being granted as signing bonuses. The increase attributable to our intensification of our development work in bio-based 1,4 BDO and adipic acid was $0.9 million and $1.8 million, respectively. Royalties and legal and maintenance costs associated with patents increased by $1.0 million, which is mostly attributable to the adipic acid platform and a higher number of applications filed during the year. The foregoing increases were partially offset by decreases in research expenses of $2.4 million due to completion of projects in Pomacle, France, costs performed by third parties which decreased by $1.4 million and other costs such as consulting fees which decreased by $1.3 million.

Sales and marketing expenses

Sales and marketing expenses increased by $1.7 million to $4.2 million for the year ended December 31, 2012 as compared to $2.5 million for the year ended December 31, 2011 primarily due to the increase in personnel costs. Salaries and benefits increased by $855,000 as a result of increases in headcount and salaries. The increase was also due to increases in business development and travel expenses, which increased by $625,000 and $419,000 respectively. The increase was partially offset by a decrease in the stock-based compensation expense attributable to sales and marketing staff by $176,000.

Depreciation of property and equipment and amortization of intangible assets

Depreciation of property and equipment and amortization of intangible assets expense increased by $1.6 million to $2.1 million for the year ended December 31, 2012 as compared to $522,000 for the year ended December 31, 2011. This increase is primarily due to the completion of $8.1 million of acquired in-process research and development associated with the acquisition of Bioamber S.A.S. As the research and development was deemed to be substantially complete, the related intangible asset was no longer considered to have an indefinite life and is being amortized over a five year useful life.

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Impairment loss and write-off of intangible assets

In the fourth quarter of 2012, we wrote off $1.2 million of unamortized value of the Sinoven Biopolymer Inc patents and in-process research and development related to the proprietary technology for modifying polybutylene succinate. We carried out testing and concluded that the technology would not meet regulatory approval in the near term for its intended initial application and that alternatives would take significant incremental cost and time. As a result of this assessment, we decided to suspend development, given other market development priorities.

Financial charges

Financial charges decreased by $3.9 million to zero for the year ended December 31, 2012 as compared to $3.9 million for the year ended December 31, 2011. The financial charges for the year ended December 31, 2011 included amounts representing the increase in estimated fair value of the contingent consideration payable in connection with the Sinoven acquisition as well as the estimated fair value of the warrants issued in connection with the conversion of the convertible notes in April 2011.

Equity participation in losses of equity method investments

Equity participation in losses of equity method investments increased by $274,000 for the year ended December 31, 2012. This increase is due to losses incurred by AmberWorks LLC, a joint venture that was formed on February 15, 2012.

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Comparison of Six Months Ended December 31, 2010 and Year Ended December 31, 2011

We changed our fiscal year end from June 30 to December 31, effective the fiscal year ended December 31, 2010. Consequently, the transitional period ended December 31, 2010 comprises six months only as compared to twelve months during the year ended December 31, 2011. The following table shows the amounts of the listed items from our consolidated statements of operations for the periods presented, showing period-over-period changes:

	Six months ended December 31, 2010	Year ended December 31, 2011	$ Increase (decrease)
		(in thousands)	
Revenues:			
Licensing revenue from related parties	$ 75	$	$ (75)
Product sales		560	560
Total revenues	75	560	485
Cost of goods sold		837	837
Gross profit (loss)	75	(277)	(352)
Operating expenses:			
General and administrative	1,590	6,776	5,186
Research and development, net	4,841	16,717	11,876
Sales and marketing	103	2,471	2,368
Depreciation of property and equipment and amortization of intangible assets	264	522	258
Foreign exchange (gain) loss	(26)	99	125
Operating expenses	6,772	26,585	19,813
Operating loss	6,697	26,862	20,165
Amortization of deferred financing costs	2	12	10
Financial charges	155	3,870	3,715
Interest revenue from related parties	(73)		73
Income taxes		108	108
Equity participation in losses of equity method investments	1,548		(1,548)
Gain on re-measurement of Bioamber S.A.S.	(6,216)		6,216
Net loss	$ 2,113	$ 30,852	$ 28,739
Net loss attributable to:			
BioAmber Inc. shareholders	$ 2,011	$ 30,621	$ 28,610
Non-controlling interest	102	231	129
	$ 2,113	$ 30,852	$ 28,739

Licensing revenue from related parties

Licensing revenue from related parties decreased from $75,000 for the six months ended December 31, 2010 to zero for the twelve months ended December 31, 2011 due to the elimination of licensing fees invoiced to Bioamber S.A.S. following our acquisition of control over Bioamber S.A.S. effective October 1, 2010.

Product sales

Product sales increased from zero for the six months ended December 31, 2010 to $560,000 for the year ended December 31, 2011 due to the recording of the first sales generated from our large-scale demonstration plant in France. Supply contracts generated $427,000 of these revenues and $133,000 were from non-contracted sales of sample product.

Cost of goods sold

Cost of goods sold increased from zero for the six months ended December 31, 2010 to $837,000 for the year ended December 31, 2011 due to the recording of the first sales generated from the demonstration plant in France.

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General and administrative expenses

General and administrative expenses increased by $5.2 million to $6.8 million for the year ended December 31, 2011 as compared to $1.6 million for the six months ended December 31, 2010 primarily due to the fact that the year ended December 31, 2011 included twelve months as compared to six months in the period ended December 31, 2010. Salaries and benefits increased by $397,000 as a result of headcount and salary increases. The stock-based compensation expense attributable to administrative staff increased by $2.0 million due to stock options granted as signing and performance bonuses and the additional compensation expense recorded in connection with shares held in escrow as a result of the modification of the release requirements. Travel expenses increased by $671,000, accounting fees increased by $595,000 and legal fees increased by $387,000 in line with our expansion strategy, which included a new subsidiary in Luxembourg and the planned construction of our planned facility in Sarnia, Ontario. In addition, general and administrative expenses increased during the year ended December 31, 2011 as a result of recruitment and relocation expenses of $273,000, board member attendance fees and travel expenses of $144,000, press release expenses of $144,000, conference and memberships of $56,000 and web site design expenses of $74,000.

Research and development expenses, net

Research and development expenses, net, increased by $11.9 million to $16.7 million for the year ended December 31, 2011 as compared to $4.8 million for the six months period ended December 31, 2010 primarily due to the longer twelve month period ended December 31, 2011. The increase was also due to the intensification of our development work related to our succinic acid platform which increased by $7.5 million to $10.5 million and to our adipic acid platform which increased by $1.0 million to $1.6 million. Royalties and patents applications and maintenance costs increased by $1.2 million to $1.6 million due mostly to a higher number of applications filed during the period. Salaries and stock compensation expenses increased by $2.0 million as a result of an augment in our headcount and salary increases granted in July 2011. In addition, the consolidation of Bioamber S.A.S. results in our financial statements for the full year ended December 31, 2011, represented an increase of $1.5 million in research and development expenses. Prior to the 100% acquisition of Bioamber S.A.S., these expenses were included in our consolidated statement of operations within the Equity participation in losses of equity method investments line for the six months ended December 31, 2010.

Sales and marketing expenses

Sales and marketing expenses increased by $2.4 million to $2.5 million for the year ended December 31, 2011 as compared to $103,000 for the six months period ended December 31, 2010 due to the longer twelve month period ended December 31, 2011 and the increase in personnel costs. Salaries and benefits increased by $1.3 million as a result of increases in headcount and salaries. The stock-based compensation expense attributable to sales and marketing staff increased by $850,000 due to new stock options being granted as signing bonuses. Travel expenses associated with the sales and marketing staff also increased by $261,000 due to the increase in headcount.

Depreciation of property and equipment and amortization of intangible assets

Depreciation of property and equipment and amortization of intangible assets expense increased by $258,000 to $522,000 for the period ended December 31, 2011 as compared to $264,000 for the period ended December 31, 2010 due to the fact that the year ended December 31, 2011 included twelve months as compared to six months in the period ended December 31, 2010.

Financial charges

Financial charges of $3.9 million for the twelve months ended December 31, 2011 included amounts representing the increase in estimated fair value of the contingent consideration payable in connection with the Sinoven acquisition as well as the estimated fair value of the warrants issued in connection with the conversion of convertible notes in April 2011.

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Equity participation in losses of equity method investments

Equity participation in losses of equity method investments decreased from $1.5 million in the six months ended December 31, 2010 to zero in the year ended December 31, 2011 following our acquisition of control of Bioamber S.A.S. effective October 1, 2010.

Gain on re-measurement of Bioamber S.A.S.

Gain on re-measurement of Bioamber S.A.S. of $6.2 million in the six months ended December 31, 2010 was associated with the acquisition of the 50% of Bioamber S.A.S. not previously owned. The acquisition required the previously owned portion of Bioamber S.A.S. to be re-measured to its estimated fair value, which resulted in a gain of $6.2 million.

Comparison of the Year Ended June 30, 2010 to the Six Months Ended December 31, 2010

We changed our fiscal year end from June 30 to December 31, effective fiscal year ended December 31, 2010. Consequently, the transitional period ended December 31, 2010 comprises six months only as compared to twelve months during the year ended June 30, 2010. The following table shows the amounts of the listed items from our consolidated statements of operations for the periods presented, showing period-over-period changes:

	Year ended June 30, 2010	Six months ended December 31, 2010	$ Increase (decrease)
		(in thousands)	
Licensing revenue from related parties	$ 966	$ 75	$ (891)
Operating expenses:			
General and administrative	1,543	1,590	47
Research and development, net	1,458	4,841	3,383
Sales and marketing	59	103	44
Depreciation of property and equipment and amortization of intangible assets	484	264	(220)
Foreign exchange (gain) loss	121	(26)	(147)
Operating expenses	3,665	6,772	3,107
Operating loss	2,699	6,697	3,998
Amortization of deferred financing costs	157	2	(155)
Financial charges	962	155	(807)
Interest revenue from related parties	(89)	(73)	16
Equity participation in losses of equity method investments	4,340	1,548	(2,792)
Gain on re-measurement of Bioamber S.A.S.		(6,216)	(6,216)
Net loss	$ 8,069	$ 2,113	$ (5,956)
Net loss attributable to:			
BioAmber Inc. shareholders	7,992	2,011	(5,981)
Non-controlling interest	77	102	25
	$ 8,069	$ 2,113	($ 5,956)

Licensing revenue from related parties

Licensing revenue from related parties decreased by $891,000 due the elimination of licensing fees invoiced to Bioamber S.A.S. following the acquisition of control effective October 1, 2010. As a result, the revenue recognized during the six months ended December 31, 2010 is for the

three months from July to September 2010 as compared to twelve months in the period ended June 30, 2010.

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General and administrative expenses

General and administrative expenses for the six months ended December 31, 2010 increased by $47,000 to $1.6 million for the six months ended December 31, 2010 as compared to $1.5 million for the year ended June 30, 2010. The increase was mostly due to the stock-based compensation expense which increased by $263,000 and performance bonuses awarded in July 2010. The increase was also in part due to the acquisition of Bioamber S.A.S. The described increases were partially offset by lower payroll, legal, accounting, rent and utilities, insurance, marketing and membership expenses as a result of the shorter six month period.

Research and development expenses, net

Research and development expenses, net increased by $3.4 million to $4.8 million for the six month period ended December 31, 2010 as compared to $1.5 million for the year ended June 30, 2010. This increase was primarily due to $2.0 million of additional expenses incurred in connection with the development of our technology. This increase was also due to the consolidation of the results of Bioamber S.A.S. in this period, which amounted to an additional $1.1 million. This amount was net of $503,000 of research and development tax credits and $10,000 of sales of samples to potential customers to test in their applications. Payroll expenses related to research and development personnel increased by $230,000 as a result of increased headcount for our research and development facility in Minneapolis, including our Chief Technology Officer. These increases were partially offset by lower minimum royalties and patent maintenance costs of $129,000 and stock-based compensation expense of $98,000 as a result of the shorter six month period.

Sales and marketing expenses

Sales and marketing expenses increased by $44,000 to $103,000 for the six month period ended December 31, 2010 as compared to $59,000 for the year ended June 30, 2010, as a result of marketing research costs. The expenses recognized for the year ended June 30, 2010 were due diligence fees incurred in connection with the acquisition of Sinoven in February 2010.

Depreciation of property and equipment and amortization of intangible assets

Depreciation of property and equipment and amortization of intangible assets expense decreased by $220,000 to $264,000 for the six month period ended December 31, 2010 as compared to $484,000 for the year ended June 30, 2010 as a result of the shorter six month period.

Financial charges

Financial charges decreased by $807,000 to $155,000 for the six month period ended December 31, 2010, as compared to $962,000 for the year ended June 30