BioAmber Inc.
Form 10-K
March 30, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2017

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to

Commission file number: 001-35905

BioAmber Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation)	98-0601045 (I.R.S. Employer Identification No.)
1250 Rene Levesque West, Suite 4310 Montreal, Quebec, Canada H3B 4W8 (Address of principal executive offices)	H3B 4W8 (Zip Code)

(514) 844-8000

(Registrant's telephone number, including area code)

Securities Registered pursuant to Section 12(b) of the Act:

None

Securities Registered pursuant to Section 12(g) of the Act:

Title of Each Class	Name of Exchange on Which Registered
Common Stock, par value $0.01 per share	OTC Pink Sheets

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

The aggregate market value of common stock held by non-affiliates of the registrant based on the closing price of the registrant's common stock as reported on the New York Stock Exchange on June 30, 2017, was $94.2 million. As of March 27, 2018, there were 129,450,655 shares of the registrant's common stock, par value $0.01 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement relating to its 2017 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated. The registrant intends to file such Proxy Statement with the U.S. Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains "forward-looking statements" that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. The statements contained in this Annual Report on Form 10-K that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or Exchange Act. Such forward-looking statements include any expectation of earnings, revenue or other financial items; any statements of the plans, strategies and objectives of management for future operations; factors that may affect our operating results; statements related to adding employees; statements related to future capital expenditures; statements related to future economic conditions or performance; statements as to industry trends and other matters that do not relate strictly to historical facts or statements of assumptions underlying any of the foregoing. Forward-looking statements are often identified by the use of words such as, but not limited to, "anticipate," "believe," "can," "continue," "could," "estimate," "expect," "intend," "may," "will," "plan," "project," "seek," "should," "target," "would," and similar expressions or intended to identify forward-looking statements. These statements are based on the beliefs and assumptions of our management based on information currently available to management. Such forward-looking statements are subject to risks, uncertainties and other important factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified below, and those discussed in the section titled "Risk Factors" included in Item 1A of Part I of this Annual Report on Form 10-K, and the risks discussed in our other Securities and Exchange Commission, or SEC, filings. Furthermore, such forward-looking statements speak only as of the date of this report. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements. Forward-looking statements in this Annual Report on Form 10-K may include statements about:

- our ability to generate sufficient cash flows and obtain the additional financing we need in order to continue as a going concern and to grow our business, develop or enhance our products or respond to competitive pressures;
- the expected funding sources of our future planned manufacturing facilities and the expected timing of the completion of construction and the start of commercial operations at each of these facilities;
- the impact of the termination of our joint venture with Mitsui & Co. Ltd., or Mitsui, on our ability to maintain and expand our operations at our Sarnia, Ontario facility;
- our offtake agreements with Vinmar International Ltd., or Vinmar, related to bio-based 1,4-butanediol, which we refer to as 1,4 BDO or BDO, tetrahydrofuran, or THF, and bio-succinic acid;
- the expected market applications for our products and the sizes of these addressable markets;
- our ability to gain market acceptance for bio-succinic acid, its derivatives including 1,4 BDO and THF and other building block chemicals;
- our ability to ramp up 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, including 1,4 BDO and THF, and other building block chemicals;
- customer qualification, approval and acceptance of our products;
- our ability to establish, maintain and advance strategic partnerships and collaborations and the expected benefits and accessible markets related to those partnerships and collaborations;
- the impact of our offtake agreements on our business with our customers, our distributors and our current and future equity partners;
- our ability to economically obtain feedstock and other inputs;
- 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;
- the timing and likelihood of government regulatory and industry certification approvals for our facilities and products;
- government policymaking and incentives relating to bio-chemicals;

- our ability to maintain an effective system of internal controls, remediate our existing material weakness and prevent future material weaknesses or significant deficiencies from occurring;
- our ability to retain members of our senior management team;
- the delisting of our common shares from the New York Stock Exchange and the Toronto Stock Exchange; and
- our ability to obtain a listing of our common stock on a U.S. trading market.

This Annual Report on Form 10-K also contains estimates, projections and other information concerning our industry, our business, and the markets for certain renewable chemicals, including data regarding the estimated size of those markets. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry and general publications, government data and similar sources.

BioAmber Inc. (together with its respective consolidated subsidiaries and affiliates, the “Company,” sometimes referred to as “we,” “us,” or “our”) is filing this Annual Report on Form 10-K for the fiscal year ended December 31, 2017 (this “Annual Report” or this “Form 10-K”) with the Securities and Exchange Commission (the “SEC”) on a late basis.

As described in the Form 12b-25 filed by the Company on March 15, 2018, this Form 10-K was delayed because of the additional time that the Company required to finalize its financial statements for the fiscal year ended December 31, 2017. The Company was delayed in finalizing these financial statements because of additional time that the Company’s independent registered accounting firm, Deloitte LLP, requires to complete its audit of the Company’s financial statements.

The Company is currently preparing its Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018, and expects to make such filing with the SEC no later than May 10, 2018.

PART I

Item 1.Business

Overview

We are an industrial biotechnology company producing renewable chemicals. Our proprietary technology platform combines industrial biotechnology and chemical catalysis to convert bio-based feedstocks into renewable chemicals that are cost-competitive replacements for petroleum-derived chemicals used in a wide variety of everyday products including plastics, resins, paints, food additives and personal care products. We currently sell our first product, bio-succinic acid, to customers in a variety of chemical markets. We produce bio-succinic acid at our facility in Sarnia, Ontario.

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. We believe that our low-cost production capability and our development of bio-succinic derived products including BDO and THF, which are used to produce polyesters, plastics, spandex and other products, will provide us with access to what we estimate to be an approximately $8 billion market opportunity.

We are working to expand our accessible markets and product portfolio by entering into strategic relationships with leading companies as well as agreements for the supply of bio-succinic acid.

We have also entered into technology partnerships to lower our production costs, expand our product portfolio and broaden 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. 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 Johnson Matthey Davy Technologies Limited, or Davy, for the conversion of our succinic acid into BDO and THF.

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

We started commercial scale production at our first plant, located in Sarnia facility in October 2015. This plant has a nameplate capacity of 30,000 tons of bio-succinic acid per year. During the year ended December 31, 2017, the plant was producing at approximately 30% of capacity in cadence with demand.

We are committed to managing our economic, social, environmental and ethical performance through sustainable business practices. We have completed a life cycle analysis for our facility in Sarnia, Ontario that indicates that no net carbon dioxide equivalent (“greenhouse gas”) is emitted per kilogram of our bio-succinic acid produced, making our manufacturing process carbon neutral. This is significantly less carbon emission 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 100% 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 facility in Sarnia consumes 64% less energy than the current petrochemical process.

We were incorporated in the State of Delaware in October 2008 as DNP Green Technology, Inc. and were established as the result of a spin-off of certain assets from Diversified Natural Products, Inc. In September 2010, we acquired the 50% interest in our joint venture Bioamber S.A.S. that we did not already own, after which, Bioamber S.A.S. became

wholly-owned by us. Concurrent with this acquisition, we changed our name from DNP Green Technology, Inc. to BioAmber Inc. and changed our fiscal year end from June 30 to December 31. Bioamber S.A.S. was wholly-owned by us until its liquidation in December 2014.

Recent Developments

Current Financial Condition

Our net loss for the year ended December 31, 2017 was $102.2 million, including a non-cash impairment loss and write-off of property, equipment and intangibles asset of $77.6 million, with total revenue for the year ended December 31, 2017 of $14.9 million, a revenue increase of 81% compared to the year ended December 31, 2016. The increase in total revenue was mainly driven by an increase in succinic acid volume, slightly offset by a decrease in average selling price. We have experienced recurring operating losses and as of December 31, 2017, we had an accumulated deficit of approximately $319 million. Our accumulated deficit has resulted from costs incurred in connection with our operating expenses and research and development expenses and from general and administrative costs associated with our operations, as well as our costs associated with sales and marketing expenses. 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.

Net cash used in operating activities for the year ended December 31, 2017 was $29.8 million. On December 31, 2017, we had cash and cash equivalents of $4.6 million and net working capital of $3.9 million. This compares to $16.2 million in cash and cash equivalents and a negative net working capital of $13.9 million, respectively, at December 31, 2016.

Our subsidiary BioAmber Sarnia Inc. ("BioAmber Sarnia") is party to a CAD $20.0 million (current outstanding balance of CAD $15.5 million) commercial loan agreement with Comerica Bank, Export Development Canada and Farm Credit Canada and the other parties thereto (as amended, the "Loan Agreement"). The Loan Agreement requires us to, among other things, maintain a minimum debt service ratio. The Loan Agreement also contains customary events of default (subject, in certain instances, to specified grace periods) including, but not limited to, the failure to make payments of interest or premium, if any, on, or principal under the loan, the failure to comply with certain covenants and agreements specified in the agreement, the occurrence of a material adverse effect, defaults in respect of certain other indebtedness and agreements, and certain events of insolvency. If an event of default occurs, the principal, premium, if any, interest and any other monetary obligations on all the then-outstanding amounts under the loan may become due and payable immediately.

On September 26, 2017, BioAmber Sarnia entered into a Waiver and Third Amending Agreement to Loan Agreement with Comerica Bank and the lenders party thereto (the "Third Amending Agreement"), which, among other things, provided for certain waivers and modifications to the Loan Agreement. Pursuant to the Third Amending Agreement, all then-existing violations under the Loan Agreement were waived by the senior lenders thereunder. In addition, the scheduled principal payments under the Loan Agreement were suspended for the period from January 1, 2017 to December 31, 2017. The scheduled principal repayments were also modified so that the revised quarterly installment will be $962,000 from March 31, 2018 until fully repaid in December 2021. In addition, the Third Amending Agreement modified certain financial covenants related to the debt service coverage ratio, minimum gross revenue from product sales and minimum cash balance that we are required to maintain. The Third Amending Agreement also modified certain covenants to restrict our ability to make certain royalty payments, certain enumerated payments in respect of government funding agreements and our loan with BDC Capital Inc., and payments under certain agreements with Mitsui.

On January 25, 2018, BioAmber Sarnia entered into a Waiver and Fourth Amending Agreement to the Loan Agreement with Comerica Bank and the lenders party thereto (the "Fourth Amending Agreement"), which, among other things, provided for certain additional waivers and modifications to the Loan Agreement. Pursuant to the Fourth Amending Agreement, all then-existing violations under the Loan Agreement were waived by the senior lenders thereunder. In addition, our minimum cash requirements and all revenue covenants were removed, and we agreed to engage a consultant to monitor our cash flows and to provide to the lenders weekly reports on our activities and monthly financial reports. We also agreed to engage an appraiser to conduct a valuation of our Sarnia facility and equipment located there before January 31, 2018. In addition, we agreed not to make any modification resulting in an increase to any management or executive compensation arrangements, not to pay any discretionary or non-discretionary bonuses to any members of the management team or executives, nor make any payments that are not contemplated by our weekly cash flow projections. We agreed to present to the lenders a letter of intent or other legally binding commitment or agreement for a recapitalization transaction by March 15, 2018. Finally, we agreed to postpone any interest and capital payments to our subordinated lenders to the earliest to occur of December 31, 2018, the time at which our secured obligations under the Loan Agreement are paid in full, and such other date as may be agreed to by the required lenders under the Loan Agreement.

On February 5, 2018, BioAmber Sarnia entered into a Waiver to the Loan Agreement with Comerica Bank and the lenders party thereto (the "Waiver"), which, among other things, provided for certain additional waivers to the Loan Agreement. Pursuant to the Waiver, the lenders agreed to waive our commitment to present a letter of intent or other legally binding commitment or agreement for a recapitalization transaction by March 15, 2018. The effectiveness of this Waiver is conditioned on the prior written consent of Mitsui and we can provide no assurance that such consent will be obtained on a timely manner or at all. We also agreed that by March 15, 2018, we will have raised cash in an amount sufficient to enable it to maintain its ordinary course operations until June 30, 2018. We further agreed that as a condition to the Waiver, by June 30, 2018, we will have closed a transaction, which includes an equity financing, refinancing or other investment or addition of capital, a joint venture, partnership, merger or other business combination, an asset sale, or, any combination thereof, that is acceptable to the lenders. Currently, we do not have any commitments or term sheets related to any such transaction. There can be no assurance that we will be able to enter into one or more transactions acceptable to the lenders. Based on management's estimates and expectations, we have prepared a multi-year plan to achieve profitability and have provided that plan to the lenders in connection with the Waiver. This plan is subject to a variety of factors, many of which are not within our control, including future sales, cost increases and decreases, fluctuations in oil prices, as well as the other factors listed in the section entitled "Risk Factors" in the our Annual Report on Form 10-K for the year ended December 31, 2017 and its subsequent filings with the SEC. Based on this plan, we expect to require approximately $24 million for the fiscal year ending December 31, 2018, which includes capital to fund our operations and assumes all required payments of interest and principal. We also have plans to reduce costs at our facility and may spend up to $10 million in capital expenditures if sufficient capital is available, although such amounts may be decreased or delayed if necessary based on our available cash. We expect to fund these amounts from public

offerings of our equity securities, private placements of our equity securities, corporate debt, government grants and/or strategic partnerships. Other than the February 2018 offering, we do not have any other commitments or term sheets related to any additional capital raising transactions and no term sheets of any kind with any prospective strategic partners. There can be no assurance that we will be able to raise additional funds or enter into such strategic partnerships. If we are unable to raise additional funds or enter into such strategic partnerships, our stockholders would likely lose most or all of their investment in us.

On February 13, 2018, we completed the closing of a registered direct offering, or the Offering, of the 15,969,166 Series A Units, with each Series A Unit consisting of one share of our common stock, par value $0.01 per share, one Series A common stock purchase warrant, or Series A common warrant, to purchase one share of our common stock, one Series B common stock purchase warrant, or Series B common warrant, to purchase one share of our common stock and one Series C common stock purchase warrant, or Series C common warrant (and the shares of common stock issuable from time to time upon exercise of these common warrants). Each Series A Unit was sold at a price of $0.15 per unit. The shares of common stock and the Series A common warrants, the Series B common warrants and Series C common warrants part of a Series A Unit are immediately separable and were issued separately.

For investors whose purchase of Series A Units would have resulted in such investor, together with its affiliates and certain related parties, beneficially owning more than 4.99% of our outstanding common stock following the closing of the Offering, we offered the opportunity to purchase, in lieu of Series A Units that would have otherwise resulted in ownership in excess of 4.99% of our outstanding common stock, 30,935,833 Series B Units. Each Series B Unit will consists of one pre-funded common stock purchase warrant, or pre-funded warrant, to purchase one share of our common stock, one Series A common warrant, one Series B common warrant and one Series C common warrant (we refer to the Series A common warrants, Series B common warrants and Series C common warrants collectively as the common warrants) (and the shares of common stock issuable from time to time upon exercise of these pre-funded warrants or the common warrants, or together, the warrants). The Series A Units and the Series B Units are referred to herein as the Units. Each Series B Unit were sold at a price of $0.149 per unit. The pre-funded warrants, the Series A common warrants, the Series B common warrants and Series C common warrants part of a Series B Unit are immediately separable and will be issued separately (including any shares of common stock issuable from time to time upon any exercise of such warrants).

Each Series A common warrant to purchase shares of common stock has an initial exercise price of $0.15 per share, subject to adjustment as set forth therein, and will be exercisable from the date of original issuance until August 13, 2018, the expiration date of the Series A common warrants. Each Series B common warrant to purchase shares of common stock has an initial exercise price of $0.15 per share, subject to adjustment as set forth therein, and will be exercisable from the date of original issuance until February 13, 2023, the expiration date of the Series B common warrants. Each pre-funded warrant to purchase shares of common stock has an exercise price of $0.15 per share, subject to adjustment as set forth therein, will be immediately exercisable and will be exercisable until the pre-funded warrant is exercised in full. The exercise price of each pre-funded warrant of $0.15 per share, subject to adjustment as set forth therein, will be pre-paid, except for a nominal exercise price of $0.001 per share of common stock, upon issuance of the pre-funded warrants and, consequently, no additional payment or other consideration (other than the nominal exercise price of $0.001 per share) will be required to be delivered to us by the holders of our pre-funded warrants upon exercise. Each Series C common warrant will be immediately exercisable and will be exercisable until the Series C common warrant is exercised in full. Each Series C common warrant will have a nominal exercise price of $0.00001 per share, subject to adjustment as set forth therein, and consequently, no additional payment or other consideration (other than the nominal exercise price of $0.00001 per share) will be required to be delivered to us by the holders of our Series C common warrants upon exercise. The number of shares underlying the Series C common warrants is initially zero, but may be increased at the end of the fifth trading day following the initial issuance date of the warrant (or such earlier trading day on which 90% of our daily volume weighted average price of our common stock on the trading market on such date is equal to or less than $0.05), to an amount equal to the difference between

(1) subscription amount of each purchaser of the Series B units divided by the lesser of (a) the original per-unit purchase price of the Series A or Series B units and (b) the greater of (i) 90% of the lowest daily volume weighted average price of our common stock on the trading market during the five trading days including and immediately prior to such date and (ii) $0.05, and (2) the sum of the number of shares of common stock and pre-funded warrants, if any, issued to the purchaser at the closing of the Offering.

The final pricing of the Offering was $0.05346 and upon full exercise of the pre-funded and Class C Warrants 131,607,744 common shares will be issued, 131,607,744 Class A Warrants and 131,607,774 Class B Warrants. From the pre-funded and Class C warrant, 54,272,012 have not been exercise as of March 27 2018.

The Offering also triggered an adjustment to the exercise price of the outstanding August 2017 Warrants, April 2011 Warrants and June 2009 Warrants. The net proceeds from the Offering were approximately $6.2 million, after deducting underwriting discounts and offering expenses payable by us.

We expect that we will have sufficient cash to continue our operations into June of 2018. This projection is based on our current expectations regarding product sales, cost structure, cash burn rate and operating assumptions. In the event that our operating expenses are higher than anticipated or our gross margins and production level do not increase as we expect, we may be required to implement contingency plans within our control to conserve and/or enhance our liquidity to meet operating needs. Such plans include: our ability

to further reduce discretionary expenses and obtain additional funding from licensing the use of our technologies. Our cash requirements relate primarily to working capital needed to operate and grow our business, including funding operating expenses, growth in production, and continued development and expansion of our products.

Our continuation as a going concern is dependent on our ability to generate sufficient cash flows from operations and to raise additional capital to meet our obligations. Based on our current operating plan, we anticipate that the net proceeds from our public offerings, a combination of government grants, interest bearing and interest-free loans and our existing cash and cash equivalents, may not be sufficient to enable us to maintain our currently planned operations. We have no additional committed external sources of funds and additional financing may not be available when we need it or may not be available on terms that are favorable to us.

We cannot assure you that we would be able to take any of these actions or that any effort to sell additional debt or equity securities would be successful or would raise sufficient funds to meet our financial obligations or finance additional facilities or that these actions would be permitted under the terms of our existing or future debt agreements. 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. If we are unable to fund our operations without additional external financing and therefore cannot sustain future operations, we may be required to delay, reduce and/or cease our operations and/or seek bankruptcy protection.

NYSE and TSX Delisting

On September 8, 2017, we received written notice from the New York Stock Exchange, or NYSE, advising us that we no longer satisfied the continued listing compliance standards set forth under Rule 802.01C of the NYSE Listed Company Manual because the average closing price of our common stock fell below $1.00 over a consecutive thirty–trading day period ending September 6, 2017.

On February 8, 2018, the NYSE notified us that it has suspended trading in our common stock, effective immediately, and has commenced proceedings to delist our common stock from the NYSE. The NYSE took this action when the trading price of our common stock decreased to below $0.16 per share on February 8, 2018. The NYSE, in interpreting the continued listing standards under Section 802.01D of the NYSE’s Listed Company Manual, has determined that a trading price of below $0.16 per share is “abnormally low” and, therefore, is cause for suspension of trading and delisting from the NYSE. Our common stock was suspended from trading intra-day on the NYSE on February 8, 2018. The NYSE’s application to the SEC to delist our common stock is pending, subject to the completion of applicable procedures. We had a right to appeal to a Committee of the Board of Directors of the Exchange (the 'Committee') the determination to delist the Common Stock, provided that it filed a written request for such a review with the Secretary of the Exchange within ten business days of receiving notice of the delisting determination. We did not file such request within the specified time period. on March 12, 2018, our common stock was delisted from the NYSE, pursuant to the provisions of Rule 12d2-2(b) of the Exchange Act because, in the opinion of the NYSE, our common stock was no longer suitable for continued listing and trading on the NYSE.

On February 12, 2018, the Toronto Stock Exchange, or TSX, notified us that it was reviewing, on an expedited basis, our eligibility for continued listing. This review resulted from the Company not being in a position to obtain the approval of the TSX in connection the Offering. On February 16, 2018, the TSX notified us that it determined to

suspend trading in our common stock, effective February 16, 2018, and to delist our securities effective at the close of market on March 16, 2018 and, effective at the close of market on March 16, 2018, our common stock was delisted from the TSX. We may seek listing of our common stock on an alternative marketplace, including the TSX Venture Exchange.

The delisting of our common stock from the NYSE and TSX is likely to have adverse consequences including, but not limited to: lower demand and market price for our common stock; adverse publicity; and a reduced interest in our company from investors, analysts and other market participants. In addition, the delisting of our common stock from the NYSE and TSX may impair our ability to execute on our operational and strategic goals, raise additional capital and attract and retain employees by means of equity compensation.

On February 9, 2018, our common stock started to trade on the OTC Pink Sheets Market.

We intend to apply for the trading of our common stock on another U.S. trading marketplace. We can provide no assurance that our common stock will commence trading on such marketplace (or, if commenced, continue to trade on this market), whether broker-dealers will continue to provide public quotes of our common stock on this market, whether the trading volume of our common stock will be sufficient to provide for a liquid trading market or whether quotes for our common stock may be blocked by this market in the future.

Industry Overview

The global chemical industry is a $2.5 trillion market, according to a 2015 report by Roland Berger. Chemicals are utilized in a broad range of end-use markets, including heavy industry, mining, construction, consumer goods, textiles and healthcare. While there is significant ongoing process innovation and technological development in the broader chemicals industry, producers are still heavily reliant on petroleum-derived feedstocks.

Reliance on Petrochemicals

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 for the following reasons:

- A Finite, Non-Renewable Resource as its Primary Input. Chemical companies are heavily dependent on oil, a finite, non-renewable resource that is in growing demand, particularly from developing economies such as India and China. Given the demand pressures on such a critical input, chemical purchasers have shown growing interest in finding cost-effective, renewable alternatives.
    - Hydrocarbon Feedstock Price Volatility. Crude oil prices have experienced significant price volatility over time. For example, during the last five years, the market price per barrel of West Texas Intermediate crude oil ranged from a low of $26.21 to a high of $112.93 and was $61.64 on February 28, 2018. As a result, we believe chemical companies are looking for more stable solutions.
- Potential for Margins Pressure at Existing Petrochemical Facilities. Given the price volatility around crude oil, chemical companies are increasingly concerned about rapid raw material price increases driven by supply shortages in basic petrochemical inputs that could negatively impact their profit margins. Due to the nature of contracts with their customers, chemical companies often cannot pass-through rising raw materials costs to their customers quickly.
- Reduced Supply of C4 Chemicals. In certain geographies, including North America, there has been a shift away from naphtha cracking to natural gas liquid cracking as a means of producing ethylene. As such, there is significantly less crude C4 fraction produced, which is a principal source of supply for C4 chemicals. Consequently, the shift to natural gas cracking has led to a drop in the supply of crude C4, a primary feedstock for C4 chemicals. This has led to increased volatility in the prices of C4 derived chemicals, including butadiene, maleic anhydride and BDO.
- Increasing Governmental Regulation. Increasing government regulation and climate change initiatives are driving up the cost of using high carbon emitting processes, such as chemical production via petrochemicals. The third phase of the European Union's Emission Trading System when implemented is expected to more broadly cover petrochemical production activities, potentially increasing costs at European petrochemical plants. In addition to regulation of carbon emitting processes, the use of petrochemicals in certain products, such as plasticizers containing phthalates, is subject to increasing regulatory pressure. In addition, several countries are implementing or reviewing a price on carbon emissions, either through taxation, cap and trade systems or other means. We anticipate that production processes that emit greenhouse gases will be subjected to additional operating costs over time due to new regulations.
- Customer Demand for Renewable and Sustainable Products. Consumers are increasingly seeking renewable alternatives to products when available. As consumers become more aware of the environmental footprint of petroleum-derived products, they may shy away from less sustainable products in favor of readily available, renewable non-petrochemical based alternatives, especially if these products are priced competitively. We believe that there is demand among certain players in the chemical value chain for more sustainable alternatives in order to differentiate themselves from their competitors. In addition, many brand owners are seeking to increase their sourcing of renewable materials in support of strategies to improve sustainability.

Biochemical Alternatives

We believe there is significant and growing demand for a low-cost and sustainable alternative to using petroleum for chemical production. We have developed a biochemical process to address this demand, using a yeast that can convert sugars derived from renewable feedstocks into bio-succinic acid. Our bio-succinic acid is a biologically produced,

chemically identical replacement for petroleum-derived succinic acid that can also substitute for other petrochemicals such as maleic anhydride, isophthalic acid and adipic acid in certain applications. Target end-uses for bio-succinic acid include plasticizers, polyurethanes, personal care products, resins and coatings, de-icing solutions, lubricants, polyethylene terephthalate resins, or PET resins and human and animal food additives.

Bio-succinic acid is often referred to as a “building block” chemical because it can also be converted into other families of chemicals that are then used in the production of a wide array of consumer end-products.

Bio-succinic acid is produced from renewable sugars in a carbon dioxide-sequestering process, which results in higher theoretical yields than other bio-based chemicals, as shown in the table below.

Chemical	Theoretical Yield	Kg Sugar Needed to Produce a Kg of Product
Bio-succinic acid	112%	0.9
Lactic acid	100%	1.0
BDO via succinic acid	85%	1.2
1,3 Propanediol	63%	1.6
Adipic acid	58%	1.7
BDO via direct fermentation	54%	1.9
Ethanol	51%	2.0
Iso-Butanol	41%	2.4
Farnesene	29%	3.5

We believe that as manufacturers of bio-based chemicals produce at reduced costs compared to their petrochemical equivalents, the market for bio-based chemicals will grow rapidly. Until now, the high cost of producing succinic acid from petroleum feedstock has limited its use. We believe there is a significant opportunity for bio-based chemical manufacturers who can reliably deliver high quality product at scale, with the required specifications of potential customers and at a competitive cost.

Our Strengths

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

Proprietary Technology Platform that Addresses a Large Market Opportunity

Our proprietary technology platform integrates industrial biotechnology and chemical catalysis to produce bio-based chemicals as cost-competitive, chemically identical replacements for petroleum-derived equivalents. 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 platform chemicals. We believe the strength of our platform, our intellectual property portfolio and our licensing agreements with Cargill and Davy will allow us to extend our chemical production beyond our current product, bio-succinic acid, to large existing markets including BDO and THF. We believe our bio-based chemicals can serve as “drop-in” replacements for existing petroleum-based chemicals in these markets. Together, these chemicals address what we believe to be an approximately $8 billion market opportunity.

Selling Commercial Product Today

We operate the largest bio-succinic acid asset in the world. Our customers utilize our product as a cost-competitive, sustainable alternative to petroleum-based specialty chemicals in polymers, food additives and flavorings, bath salts, polyurethanes, pharmaceutical and other applications. Our ability to supply large scale quantities of bio-succinic acid at a competitive price is intended to enable our customers to develop new applications and initiate commercialization of their products.

Cost-Competitive Economics

Our experience operating the large-scale demonstration facility in Pomacle, France for five years prior to commencing operations in our Sarnia plant helped us to refine our process to make bio-succinic acid cost-competitive without subsidies. We expect to produce bio-succinic acid that is cost-competitive with succinic acid produced from oil priced as low as $30.00 per barrel, based on management's estimate of production costs at full capacity at our facility in Sarnia, Ontario and an assumed corn price of $4.00 per bushel. Since commencing operations at our Sarnia facility, we have observed that our fermentations consistently achieved our targeted yield, productivity and volume targets. Our fermenters are greater than one million liters in volume.

Limited Exposure to the Availability and Price of Sugar

Our process requires less sugar than other renewable products. We require approximately 50% less sugar to produce a pound of bio-succinic acid than is needed to produce a pound of ethanol (0.15 gallons), and even less sugar than is needed to produce a pound of several other bio-based chemicals. This makes our process less vulnerable to price increases in sugar, relative to other bio-based processes. This efficient use of sugar translates into reduced consumption. At full capacity, our Sarnia facility will require less than

0.4 % of the annual North American production of sugar from corn dextrose and high fructose corn syrup. Given this modest demand and our ability to source sugar from a variety of sources, rapid growth in our production capacity would not likely have a material impact on the sugar markets from which we plan to source.

Global Manufacturing Expansion Plan

Our Sarnia facility has a nameplate capacity of 30,000 metric tons of succinic acid per year and has been in operation since October 2015. We plan to build a second manufacturing facility in North America. This second facility would have the fermentation capacity required to produce 200,000 metric tons of bio-succinic acid annually at full capacity. A majority of this succinic acid would be further converted into BDO and THF using technology licensed from Davy. We have completed the initial design of a plant that would have the capacity to produce 60,000 metric tons of bio-succinic acid, 70,000 metric tons of BDO and 24,000 metric tons of THF annually.

Our goal is to use the free cash flows from our facilities to finance the construction and operation of additional plants in the future. We may also license out our technology opportunistically to companies that would have internal use for the technology, or that are located in jurisdictions where we could not easily build and operate our own plants.

Experienced Management Team with Strong Track Record

Our management team consists of experienced professionals, possessing extensive experience in scaling up, manufacturing and commercializing chemicals and bio-based products, gained at both large companies and entrepreneurial start-ups.

Our Strategy

Our goal is to be a leading provider of renewable chemicals by replacing petroleum-based chemicals with our bio-based alternatives. We plan to achieve this goal by pursuing four key strategies.

Sell out our Current Facility and Expand Our Global Manufacturing Capacity

We started commercial operations in the fourth quarter of 2015 at our first commercial facility in Sarnia, Ontario in cooperation with Mitsui. Our near-term focus is to sell out the capacity of this facility. We plan to construct additional large-scale bio- succinic acid facilities in multiple geographic regions employing a standardized design that facilitates expedient and capital-efficient growth. We expect to benefit from incremental cost reductions and further technological and engineering improvements at each additional facility. To further streamline production and reduce costs, we plan to integrate production and locate these facilities in proximity to required infrastructure and feedstock. We intend to retain operational control and, when possible, a majority interest in these facilities, as possible, and leverage new partnerships to obtain capital, construct the facilities, secure feedstock, sell future output and assist with manufacturing and market access.

Target the Large and Established Markets for BDO and THF

We intend to leverage our ability to produce high quality bio-succinic at low cost, by converting it into BDO and THF, which are used in the production of polyesters, plastics, spandex and other products. We have licensed technology from Davy, which we believe will enable us to produce BDO and THF at a cost that is competitive with alternative processes, at equivalent purity.

Expand the Market for Succinic Acid

We plan to continue to work with independent labs, industry leaders and customers to test the use of our bio-succinic acid in new and emerging applications. This work will involve new products made with bio-succinic acid, as well as the substitution of conventional petro-chemicals with renewable succinic acid in existing products. We intend to continue to generate data that demonstrates value in use, including performance or economic benefits, along with the greater sustainability that our bio-succinic acid offers compared to that derived from petroleum. We also plan to leverage our proprietary technology platform and expertise in the production of bio-succinic acid to enable the production of derivatives including salts, esters, polyols and plasticizers.

Continue to Reduce the Cost of Our Products

Our goal is to be the lowest cost producer of the chemicals we manufacture. Our bio-succinic acid production process has high yields and benefits from our proprietary low pH yeast and our simplified purification process. We plan to continue to carefully invest in research and development and process engineering to further improve our technology platform's yield, productivity, energy consumption and purification recovery, in an effort to further reduce our operating costs and the capital intensity of future plants. We

have also implemented an operational excellence program in our Sarnia facility that aims to continuously improve the efficiency of our plant operations. We have identified, and are beginning to implement, projects that are anticipated to substantially reduce our variable costs.

Our Products

Bio-Succinic Acid

We chose to develop bio-succinic acid as our first product because it is a platform chemical that can be used in a broad range of markets, from high-value niche applications such as personal care products and food additives, to large volume applications such as bioplastics, plasticizers, polyurethanes, resins and coatings. Bio-succinic acid is also unique in terms of the limited quantity of sugar that is needed for its production. In 2004, the DOE published a report on "Top Value-Added Chemicals from Biomass", identifying the top opportunities for the production of chemicals from biomass. The study prioritized twelve chemicals, from a group of over 300 possible building blocks that could be most effectively manufactured from sugars. Bio-succinic acid was recognized as one of the renewable building block chemicals with the greatest technical feasibility and commercial potential.

We have identified four main market opportunities for our bio-succinic acid platform:

- Replacing petroleum-based succinic acid in applications where it is currently in use, such as food additives and fine chemicals.
- Replacing other petroleum-based organic acids, such as adipic acid in polyurethanes and plasticizers, or isophthalic acid in PET resins and unsaturated polyester resins. Organic acids utilized in animal feed are also an opportunity for us.
- Expanding into new uses for succinic acid, such as phthalate-free plasticizers, silicone replacements and bioplastics such as polybutylene succinate, or PBS.
- Converting bio-succinic acid into BDO and THF, which are large volume, existing markets readily accessible to our "drop-in" bio-based alternatives.

Historically, the high cost of producing succinic acid from petroleum feedstock limited its use to a narrow range of specialty applications such as pharmaceuticals and food ingredients. A study published in August 2012 by Roland Berger estimated the market for petroleum-based succinic acid at approximately 51,000 metric tons per year with substantial growth potential.

We are currently marketing our bio-succinic acid in several markets, using technical data to demonstrate value in use:

- Polyurethanes. Adipic acid is currently used in polyester polyols, which are used to make polyurethanes. Polyurethanes are used in, among other things, soles for footwear, molded foams for automotive applications like car seats and arm rests, artificial leathers and non-foam applications such as coatings, adhesives and sealants. Bio-succinic acid can be used to replace adipic acid in some segments of this market, and it is currently the only renewable alternative to adipic acid for the production of polyurethanes. Suppliers of polyester polyols are actively looking for bio-based, cost-effective substitutes for adipic acid to improve the environmental profile, derive differentiated performance attributes, or reduce the cost of their products.
- Resins and Coatings. Bio-succinic acid can be used to replace other organic acids in polyester coating resins, unsaturated polyester resins, or UPR, and polyester polyols used in urethane surface coatings. Bio-succinic acid can offer differentiated performance in some applications, as well as environmental advantages and cost-effectiveness.
- Food Additives. Succinic acid is currently used for its multiple functions in food applications; as an acidulant, to increase the tartness or acidity of food, as a pH regulator for food ingredients, and as a flavoring agent. The unique

'umami' flavor of succinic acid gives a salty, soy-like taste to food and is used in the production of soy sauce, miso, sake and synthetic liquors in Asia. Outside of Asia, succinic acid is used in the baking industry. Succinic acid can also be used to replace malic acid, which provides a bitter salty taste similar to succinic acid, and adipic acid that is used as a flavor in fruit drinks and as a gelling aid for gelatin desserts.

- Lubricants and Corrosion Inhibitors. Adipate esters are widely used in the lubricants market as base oils or as additives to form industrial lubricants and metal-working fluids. Bio-succinic acid is capable of replacing adipate esters and producing sustainable succinate esters that meet the demand for more environmentally friendly, non-toxic lubricants. Our bio-succinate esters also perform well in terms of improved flowability in cold temperatures and better prevention of oxidation, rust and corrosion.
- Fine Chemicals. Succinic acid is used today in a variety of high value-added applications including dyes, inks and toners. Succinic acid is also used in pharmaceutical applications. Derivatives of succinic acid such as succinimides can provide multiple functions in pharma applications, such as a pH buffer, an antibacterial or chelating agent, a coatings/sizing agent, or as a stabilizer for other ingredients.

- De-icing Solutions. Chlorides are the most commonly used de-icer for roadways. Potassium salts are typical non-chloride de-icers used for roadways as well as airport runways and other surfaces. We have developed a patented bio-succinic acid-based de-icer formulation for use on airport runways. Our bio-based product is significantly less corrosive than potassium acetate and potassium formate. Bio-succinic acid based products can also be used as wetting agents for chlorides in the larger roadway market, which can in turn reduce the corrosiveness of the chlorides applied to surfaces.

- Personal Care Products. Our focus in the personal care market has been the use of esters of bio-succinic acid as natural emollients and surfactants. Emollients are used in lotions, liquid soaps and cleansers to improve and moisturize skin, while surfactants are used in soaps, body washes and shampoos to allow easier spreading. We believe there is a significant opportunity for bio-based alternatives as consumers are increasingly demanding renewable products and ingredients in the personal care products they use including the replacement of silicone based ingredients in shampoos and other products.
- Co-monomer in PET resins. Isophthalic acid is used as a co-monomer in the production of PET resin, which is then used to produce carbonated soft drink and water bottles, and various packaging. Isophthalic acid is added to PET resin to improve crystallinity (approximately 3% by weight). Bio-succinic acid has been shown to provide the same benefits as isophthalic acid, without negatively impacting the PET resin, while offering a significant cost savings and greater renewable content.
- Polybutylene Succinate. PBS is a biodegradable polymer made by reacting succinic acid with BDO. The market for this biopolymer is currently limited by capacity and price, and the fact that it has traditionally been made with petroleum-derived succinic acid and BDO. Applications range from single-use food service ware, including cutlery, cups and lids, agricultural mulching film and compostable bags. Our bio-succinic acid enables PBS to be lower cost and partially renewable, and upon commercialization, we expect our BDO will enable PBS to be 100% bio-based.
- Plasticizers. Plasticizers are organic esters that are primarily used to render polyvinyl chloride, or PVC, more flexible. PVC is widely used in multiple end-markets because it is low cost, durable and versatile. Bio-succinic acid esters can serve as replacements for the major phthalate-based plasticizers, which account for over 80% of the worldwide plasticizer market. There is increasing demand for renewable, phthalate-free plasticizers, particularly in sensitive applications such as children's toys and childcare articles. We entered into a joint development agreement with Arlanxeo, a global leader in phthalate-free plasticizers, to develop a portfolio of bio-succinic-based phthalate-free plasticizers that can exceed the performance of general purpose plasticizers at competitive prices. Arlanxeo has begun to market a range of succinic acid based plasticizers, under the Uniplex brand.

We estimate the global addressable market for these various uses of bio-succinic acid is in excess of $2 billion.

Bio-based 1,4 Butanediol (BDO)

Succinic acid can be used to produce BDO. The major uses of BDO are in the production of polyurethanes and PBT. PBT is an engineering-grade thermoplastic that combines excellent mechanical and electrical properties with robust chemical resistance. The automotive and electronics industries heavily rely on PBT to produce connectors, insulators, wheel covers, gearshift knobs and reinforcing beams. We believe there is growing interest in the automotive industry to produce PBT and blends that are partially bio-based to enable automobile manufacturers to meet their sustainability goals. Based on information obtained from ICIS Chemical Business Magazine (August 27 to September 9, 2012), the global BDO market is estimated to be approximately $4 billion.

Tetrahydrofuran

Succinic acid can also be used to produce THF. THF is used to produce spandex fibers and other performance polymers, resins, solvents and printing inks for plastics. There is also growing demand in the apparel industry for renewable, bio-based spandex. Based on information obtained from CEH Marketing Research Reports on THF published in October 2010 and March 2013, respectively, we estimate the global THF market to be approximately $2 billion.

Our Technology

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 distinct technologies:

- the production of succinic acid through fermentation; and
- the conversion of succinic acid into BDO and THF by catalyst-assisted hydrogenation.

Succinic Acid Production

Our process is based on the fermentation of sugar using a proprietary yeast organism to produce bio-succinic acid. Following separation and purification, bio-succinic acid, in its finished form, is a white crystal that physically resembles table salt.

In 2010 we signed a license with Cargill granting us exclusive rights to their yeast platform for the production of bio-succinic acid that could offer lower capital costs and lower operating costs. Cargill had developed a proprietary yeast host that is very robust and capable of thriving in harsh fermentation conditions, including high tolerance to organic acids such as succinic acid, high tolerance to low pH, physical robustness to heat, agitation and processing, high glycolytic rates and the ability to grow in a simple medium with inexpensive nutrients. Cargill has a patent portfolio to protect its yeast platform.

Our yeast produces succinic acid at a very low pH, so that there is no base added during the fermentation. This results in reduced energy consumption and a simplified purification process. Our yeast also gives us the ability to use larger, less complex fermenters relative to bacteria, leading to lower capital intensity and operating costs. Our Sarnia plant operates with our yeast. Since we began operations in the Sarnia facility in the fall of 2015, we have consistently achieved our performance targets with respect to our yeast's yield on sugar, productivity and production quantity. We are continuing to improve our yeast to further enhance its performance, thereby further reducing the cost of production and the capital intensity of future plants.

1,4-BDO / THF Production

We plan to utilize catalyst technology licensed from Davy to transform our bio-succinic acid into BDO and THF. The process involves passing the methyl ester form of our bio-succinic acid and hydrogen gas into a fixed bed reactor over a heterogeneous catalyst, converting the bio-succinic acid into a mixture of BDO and THF. These outputs are then distilled to separate, purify and recover the high quality BDO, and THF. Our bio-succinic acid has been tested and validated in Davy's pilot plant to assure performance and quality, and the Davy license provides performance guarantees for process economics (yields, catalyst and utility consumption, recovery of final product) and final product quality.

Technology Partnerships

We have developed our technology platform through open innovation—using partnerships and licenses to access the best available technologies, facilities and know-how. We have complemented these third party contributions with in-house development efforts, integrating the whole into a competitive platform. The use of open innovation has reduced the capital and operating costs of development and accelerated our development efforts.

Cargill Inc.

In April 2010, we entered into a commercial license agreement with Cargill pursuant to which Cargill granted us an exclusive, worldwide, royalty bearing license. We agreed to pay Cargill a royalty based on net sales of our products, but in no event less than a minimum annual royalty payment if we wish to maintain our exclusive license. If royalties based on net sales are below the minimum annual royalty payment, we can elect to pay the difference. If we elect not to pay the difference in any one year, Cargill may transform the exclusive license granted to us under the agreement to a non-exclusive, worldwide license. This is a long-term agreement that renews automatically.

In May 2012, we secured a worldwide, royalty-bearing license from Cargill to use certain patents that cover Cargill's yeast for the production of adipic acid. In addition to the license, we were granted the option to further develop Cargill's yeast so that it can consume ligno-cellulosic and non-food feedstocks to produce bio-succinic acid or bio-adipic acid.

Johnson Matthey Davy Technologies Limited

In December 2014, we entered into a license agreement with Davy. We intend to use the technology licensed from Davy in our contemplated second plant. We also entered into an engineering agreement with Davy in relation with the license agreement, under which Davy provided a complete basic engineering package for converting bio-succinic acid to BDO and THF, along with the provision to supply certain pieces of equipment and the catalysts needed to operate the plant. Davy will also provide on-site construction and commissioning support, and performance guarantees for the subsequent operation of the plant as part of its technology license to us.

National Research Council of Canada

We have partnered with the National Research Council of Canada, the Government of Canada's premier organization for research and development, and with the Institut national de la recherche scientifique, or INRS, the branch of the Université du Québec dedicated to fundamental and applied research, to develop an organism that can consume methanol or methane for the production of bio-succinic acid. We began this work in November 2012. The work led to the production of one PCT and one U.S. patent application. We proved that we can engineer a specific microorganism to produce bio-succinic acid using biogas or methane but more research will be required to design a cost-effective process.

Intellectual Property

Our success depends in part upon our ability to obtain and maintain protection for our proprietary technologies and to operate without infringing the intellectual property rights of others. We primarily protect our intellectual property in Canada, the United States, Europe and certain other jurisdictions through a combination of (i) patents and patent applications for our inventions; (ii) trademark protection on our product names; and (iii) trade secret protection where we deem appropriate. We also seek to ensure a competitive position through several partnerships, joint development and joint venture agreements.

We own or have rights in patents and patent applications directed to various aspects of our business. Our licensing agreement with Cargill gives us access to four existing patent families covering topics such as methods and materials for the production of organic products including organic acids using genetically-modified yeast species to fermentation process optimization. Patents resulting from these four patent families are scheduled to expire from 2019 to 2026. Our collaboration with Cargill has also generated four international patent applications licensed to us or owned by us that are directed to the production of succinic acid. Patents, if granted on these patent applications, would expire in 2031 to 2033.

With regard to the purification of bio-succinic acid and other dicarboxylic acids produced by fermentation, we own several U.S. and nine granted patents in Europe and other countries directed to processes for producing succinic acid, adipic acid, and other di-carboxylic acids, or their ammonium salt forms from fermentation broths. These patents are set to expire in 2031 onwards. For BDO and THF production, we entered into a technology license with Davy for a new plant. We have also secured the right to license that same technology for two additional BDO/THF plants.

For the conversion of bio-succinic acid to BDO, we also own patents and patent applications in various countries including United States, Europe and Canada. These patents and patent applications are directed to the conversion of bio-succinic acid to BDO. These patents and applications are scheduled to expire in 2031. In addition, we own an international patent application, U.S. patent applications and corresponding patent applications in Europe, Canada and other countries that are directed to the conversion of bio-succinic acid into other compounds including diaminobutane, succinic dinitrile, succinamide and pyrrolidones. If granted, these patents would expire in 2031. We also own or have rights in patents and patent applications directed to the use of succinic acid and succinic acid salts. For example, we own a U.S. patent and a Canadian patent directed to de-icing compositions. These de-icing patents are scheduled to expire in 2029.

We have negotiated standstill and non-assertion agreements with two companies, Reverdia and Mitsubishi Chemical, or MCC, whereby these companies have agreed not to claim any patent infringement against our succinic acid technology in return for a running royalty on our bio-succinic acid sales. These agreements are not an admission of infringement on our part, and they do not give us the right to practice these companies' technologies. We entered into these agreements in furtherance of our strategy to seek full freedom-to-operate in the production of bio-succinic acid.

We have sought protection for the BioAmber logo and composite trademark (name and logo) in association with chemicals used for industrial purposes, namely, organic acids, di-functional alkanes, organic salts and derivatives. We have sought protection in the United States, China, Japan, South Korea, European Union, India, Mexico, Canada, Thailand, Taiwan, Russia, Australia and Brazil.

We also protect our proprietary information through written agreements. Our employees, consultants, contractors, partners and other advisors are required to execute nondisclosure and assignment of invention agreements upon commencement of employment or engagement. In addition, we protect our proprietary information through written confidentiality agreements with outside parties who may be exposed to confidential information.

Our Feedstock Strategy

Our yeast can use a range of renewable feedstocks as a source of fermentable “sugars”, including glucose (also called dextrose) from corn, wheat, tapioca and other starch and cellulose sources, sucrose (also called sugar) from cane, beets or sorghum and biomass sugars containing significant quantities of glucose, derived from agricultural and forestry waste. Given the relatively small quantity of fermentable sugars that we require to produce bio-succinic acid, we have initially sourced commercially available dextrose syrup for our facility in Sarnia, which we believe to be the most cost competitive source of fermentable sugars today in North America. We have entered into a multi-year glucose supply agreement with a leading producer that operates several glucose production plants in North America. As biomass sugar technologies mature and become commercially available at competitive prices, our plan is to also source them for a portion of our chemicals production (feedstock hedging and diversification).

We have a relationship with Comet, a Canadian based company scaling up technology to produce biomass sugar. Comet technology will offer high-purity glucose that could be produced in Comet’s planned commercial facility in Sarnia, Ontario. The glucose would be produced from agricultural residues using Comet’s innovative extraction technology. We made a small equity

investment in the amount of $412,434 (CAD$500,000) in Comet. We had tested several biomass sugars and we believe that today, Comet offers glucose that is on par with corn dextrose in term of quality. Comet had proven this by operating a large demonstration plant in Italy. We recognize the growing need to focus the food chain on human nutrition, and to use sustainable, non-food, sources of biomass to produce chemicals and materials. As such, we plan to incorporate biomass derived sugars into our supply chains as they become commercially available and economically viable. We are considering three strategies to achieve this goal: (i) assist Comet with its scale-up and source the sugars they eventually produce for bio-succinic acid production in our Sarnia facility; (ii) license Cargill's lignocellulosic technology and incorporate it into our yeast, so that the yeast can consume C5 sugars derived from lignocellulose; and (iii) develop a next-generation organism that can consume methanol or methane as the source of carbon to produce succinic acid. This would allow us to use alternative feedstock such as syngas.

Our Approach to Sustainability

We are committed to managing our economic, social, environmental and ethical performance through sustainable business practices. We have completed a life cycle analysis for our facility in Sarnia that indicates that no net carbon dioxide equivalent (greenhouse gases) is emitted per kilogram of our bio-succinic acid produced, making our process carbon neutral. This is significantly less carbon emission 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 100% 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 facility in Sarnia consumes 64% less energy than the current petrochemical process.

Manufacturing Operations

Sarnia, Ontario

Our facility in Sarnia, Ontario is on a land that we own and is located within a bio-industrial park. The site is co-located in a large petrochemical hub with existing infrastructure that facilitates access to utilities and certain raw materials and finished product shipment, including steam, electricity, cooling water and water treatment. The facility has a nameplate capacity of 30,000 metric tons of bio-succinic acid per year and we started commercial scale production in October 2015.

(front view of the Sarnia facility)

The plant has received ISO 9001 (for its quality management system), ISO 14001 (for its environmental management system), OHSAS 18001 (for its health and safety management system) and FSSC 22000 certification (for its food safety management system). These certifications were granted by accredited certification bodies following audits of the Sarnia plant in the fourth quarter of 2015 and were renewed in 2016

(Side view of the Sarnia Facility)

Additional Planned Manufacturing Facilities

We plan to build a second integrated manufacturing facility that we expect will produce approximately 200,000 metric tons per year of bio-succinic acid and then transform a majority of the bio-succinic acid into 70,000 metric tons per year of bio-based 1,4 BDO and 24,000 metric tons per year of THF, along with 60,000 metric tons per year of crystalline succinic acid. We have signed a fifteen-year offtake agreement with Vinmar for 100% of the BDO and THF output. We have also signed an offtake agreement with Vinmar for a portion of the bio-succinic acid production. The annual volume of the offtake agreement will be agreed between the parties prior to the financial close of the plant. Vinmar plans to take a 10% equity stake in the plant. We are actively seeking other minority equity partners for this facility, as well as government support in the form of low interest loans or loan guarantees.

Based on current estimates and assumptions, we expect this second North American manufacturing facility to have construction costs of approximately $500 million. We are seeking to finance 70% of the capital cost through project level debt. In the fall of 2016 we announced an important milestone in our application for a $360 million loan guarantee from the DOE. The DOE's Loan Program Office, or LPO administers a four phase process under the Title XVII Innovative Clean Energy Projects loan guarantee program. This program finances innovative renewable energy and efficient energy projects. We had successfully completed the first two phases of the process and were selected for the next phase in which we have engaged the LPO in the negotiation of terms and conditions of the potential loan guarantee, and we have been working with the LPO to validate the engineering, environmental, market and financial information that we had submitted in the previous phases. We completed the first two phases of this process under the Obama administration. There can be no assurance that the Trump administration will continue this program. Accordingly, there can be no assurance that we will be able to secure the U.S. DOE loan guarantee. We have also been engaged with Canadian federal and provincial agencies in a similar process to secure low interest loans to build the plant in Sarnia Ontario, rather than in the United States. Our discussions with Canadian federal and provincial agencies are being impacted by their desire to see improved financial performance at our Sarnia facility. There can be no assurance that we will be successful in securing low interest loans from Canadian federal or provincial agencies.

On December 16, 2016, we entered into a non-binding letter of intent with CJ Cheiljedang Corporation, or CJCJ. Until December 31, 2017, we and CJCJ have entered into an exclusivity period in which we may not discuss, evaluate or enter into binding or non-binding agreements with any third parties in connection with a retrofit of an existing fermentation facility to produce bio-

succinic acid using our low pH technology or to build new bio-succinic acid capacity in China or South Korea. Similarly, CJCJ may not discuss, evaluate or enter into binding or non-binding agreements in connection with the research, development, manufacture or marketing of bio-succinic acid. Under the terms of the agreement, we and CJCJ plan to establish a joint venture in China to produce up to 36,000 metric tons of bio-succinic acid annually and commercialize the output in Asia.

The letter contemplates the retrofitting of an existing CJCJ fermentation facility with our succinic acid technology. CJCJ would incur all capital costs required to retrofit its fermentation facility, including the capital needed during plant commissioning and startup, and with production expected to begin in the second quarter of 2018. The joint venture could subsequently expand production capacity through debottlenecking and/or additional investment. CJCJ is expected to own 65% of the joint venture and we are expected to own 35%. The joint venture would pay us a technology access fee for our bio-succinic acid technology, and pay CJCJ a tolling fee for producing bio-succinic acid on its behalf. The joint venture is subject to certain conditions, including technical and commercial due diligence. As of December 31,2017, no definitive agreement had been reached and the letter of intent was not renewed. There can be no assurance that we will be successful in entering into this joint venture on the proposed terms described above, or at all.

Research and Development

As of December 31, 2017, our research and development department activities funded an internal team of 13 scientists and engineers that were employed by us. We also work with partners, including Cargill, to accelerate time to market and leverage existing know-how and infrastructure. Our technology development was initially focused on capabilities in fermentation engineering, analytical chemistry and molecular biology.

Our net research and development expenditures were approximately $5.5 million, $7.2 million and $20.3 million for the years ended December 31, 2017, December 31, 2016 and December 31, 2015, respectively.

We compete with petro-based succinic acid manufactured by established companies, including Kawasaki Kasei, Nippon Shokubai, and numerous Chinese producers including Anqing Hexing Chemical Co. Ltd., and Anhui Sunsing Chemicals Co., Ltd. In addition, we compete against other companies producing bio-succinic acid, though these companies operate demonstration scale plants that are smaller than our Sarnia facility. These competitors are PTT Global Chemical, owner of Myriant Corporation, Reverdia, a collaborative venture between DSM and Roquette Frères S.A., and Succinity, a collaborative venture between BASF and Corbion.

We believe that the primary competitive drivers include:

- the ability to use yeast as opposed to a bacterium in the production of bio-succinic acid;
- technology performance, including overall yields and fermentation productivity relative to our bio-based competitors;
- price and production costs relative to both bio-based and petroleum-derived suppliers of our products;
- capital requirements and access to capital, particularly in relation to our bio-based competitors;
- feedstock (sugar) flexibility;
- location and size of production facilities, which dictate raw material and utility prices and the economies of scale that can be achieved for capital expenditures, labor and maintenance;
- the ability to rapidly scale-up production to large scale, produce meaningful volumes and offer customers reliable supply in qualified facilities; and
- the purity and quality of our products.

We believe we compete favorably with respect to all of these drivers. With our yeast and our simple purification process, we are confident that we are a cost competitive producer of high quality bio-succinic acid relative to both our bio-based competitors and existing petroleum producers. In addition to our technology advantage, we believe the size of our Sarnia plant also provides a cost advantage in terms of depreciation and fixed operating costs, given that our bio-succinic competitors operate plants that are less than half our annual capacity, and in the case of DSM-Roquette and Corbion-BASF, one third the size of Sarnia. The location of our plant also provides us with lower cost sugars and energy than in Southern Europe, where the DSM-Roquette (Italy) and Corbion-BASF (Spain) plants are located.

Our first-to-market leadership in bio-succinic acid provides us with a lead-time advantage that we have leveraged to secure customer relationships, enter into contractual agreements and establish partnerships for new succinic acid applications and derivative products. However, our competitors include large chemical companies that are better capitalized, with larger research and development departments and budgets, and well-developed distribution systems and networks for their products. These companies have relationships with our potential customers and have sales and marketing programs in place to promote their products.

With respect to our BDO/THF, we believe we will be cost competitive with petroleum derived processes. Our technology to produce BDO will require approximately less capital than the n-butane-based process. Given the competitive cost structure of our bio-succinic acid, which will serve as the starting material for the production of BDO/THF in our integrated production plants, we project that our full cost for BDO and THF will also be competitive.

We also believe that we will be cost competitive with other bio-based routes to BDO due to the high yield on sugar that we gain from converting sugar to succinic acid. Our integrated process involves two steps: fermentation of sugar to produce succinic acid, followed by the catalytic conversion of succinic acid to BDO, as opposed to a single step production that other companies, such as Genomatica, achieve by directly fermenting sugar to BDO. However, sugar is a significant component of variable cost in both processes, and the theoretical yield for the Genomatica one-step process requires roughly 50% more sugar than the theoretical yield of our two-step process. The term “theoretical sugar yield” with respect to these processes refers to the quantity of sugar obtained from the complete conversion of a feedstock in a chemical reaction under ideal conditions with perfect efficiency. Real-life processes inevitably incur processing losses and produce small quantities of by-products that reduce the overall yield on sugar, so that the actual yields are inferior to theoretical yields. Because there is approximately 24% weight loss during the conversion of bio-succinic acid to BDO due to the production of water, the theoretical sugar yield for BDO production is 85%, which is approximately 50% higher than the theoretical sugar yield for direct fermentation to BDO.

Regulatory Overview

We are subject to various international, federal, state and local regulatory laws, rules and regulations, including those relating to pollutant discharges into the environment, the management of hazardous materials, the protection of endangered species and the health and safety of our employees. For example, in the United States, the Occupational Safety and Health Act and analogous state laws and regulations govern the protection of the health and safety of employees. The Clean Air Act and analogous state laws and regulations impose obligations related to emissions of air pollutants, including greenhouse gases. The Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA, and analogous state laws and regulations govern the clean-up of hazardous substances. The Water Pollution Control Act, also known as the Clean Water Act, and analogous state laws and regulations govern discharges into waters. 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 genetically modified microorganisms.

In Canada, similar regulatory programs exist under the Canadian Environmental Protection Act, 1999, or CEPA 1999. In particular, a regulatory program similar to TSCA requires that Environment Canada approve the manufacture of any chemical not already included on the Domestic Substances List, or DSL. We obtained the approval from Environment Canada with respect to the use of our yeast in 2013. If Environment Canada were to require any of our future products to undergo extensive testing, which we currently do not anticipate, securing approval to manufacture such products would 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. BioAmber’s bio-succinic acid has been approved under REACH.

In addition, we are or will be required to obtain, maintain or file various approvals, permits, licenses, registrations, certifications, intents to manufacture, environmental assessments and other requirements, such as air emission and water discharge permits, construction permits and boiler licenses. Such laws, regulations and permit conditions can

result in substantial liabilities and the potential for permit revocations and plant shutdowns in the event we fail to comply with the applicable law, regulation or permit condition. The development of new processes, manufacture of new products using our processes, commercial sales of products produced using our processes, as well as geographic expansion, and in particular international expansion, will subject us and our industry partners to additional regulatory laws, rules and regulations. Finally, as we enter new markets such as the food, feed or cosmetic industries, we will be required to follow specific rules and regulations for these new applications.

The construction and operation of our production plants require obtaining permits and other approvals in various jurisdictions. For example, the production plant in Sarnia, Ontario, Canada required Certificates of Approval from the Ministry of Environment, an Environmental Assessment under the Canadian Environmental Assessment Act, approval of the organism under CEPA 1999 and planning, construction, building, occupancy and fire permits from the City of Sarnia. Similar requirements are anticipated to apply in other countries where production plants are or may be planned. As a condition to granting the permits and other approvals, regulators could make demands that increase our construction and operating costs and result in the need to procure additional financing. Failure to obtain and comply with all applicable permits and other approvals could halt construction and subject us and our partners to future claims. We therefore cannot guarantee procurement or compliance with the terms of all permits and all other approvals needed to complete, and later continue to operate, our and our partners' production plants. In addition to actual plant operations, liabilities could arise from investigation and clean-up of environmental contamination at our and our partners' production plants. We and our partners may also be subject to third-party claims alleging property damage or personal injury due to the release of or exposure to hazardous substances.

In addition, new laws, new regulations, new interpretations of existing laws or regulations, future governmental enforcement of environmental laws or other developments could result in significant expenditures. For example, in 2009, the U.S. Environmental Protection Agency announced its "Essential Principles for Reform of Chemicals Management Legislation" and in April 2011, the Safe Chemicals Act of 2011 was introduced in the U.S. Congress. This bill would have amended TSCA to be more similar to REACH and require safety testing of all industrial chemicals and could have resulted in the need to disclose confidential business information relating to chemical safety. We are monitoring this and other legislative and regulatory developments. Any failure by us or our industry partners to comply with applicable regulatory rules and regulations could harm our reputation as well as our business, financial condition and operating results. In addition, regulatory approvals, registrations, permits, licenses, certifications and other requirements may be denied or rescinded resulting in significant delays, additional costs and abandonment of certain planned activities or require us to engage in costly and time consuming efforts to remediate. Compliance with applicable regulatory rules and regulations can be costly and time consuming.

Financial Information About Segments

We operate as one operating segment. Operating segments are defined as components of an enterprise for which separate financial information is regularly evaluated by the chief operating decision makers, or CODMs, which are our [chief executive officer and chief operating officer], in deciding how to allocate resources and assess performance. Our CODMs evaluate our financial information and resources and assess the performance of these resources on a consolidated basis. Since we operate in one operating segment, all required financial segment and geographic information can be found in the consolidated financial statements.

Employees

As of December 31, 2017, we had eighty-five full-time employees. Of these employees, thirteen were engaged in research and development and engineering, four were engaged in sales and marketing, seventeen were engaged in general and administrative activities and fifty-one were engaged in operational activities. Sixty-seven employees are based in Canada, fifteen are based in the United States and the remaining three employees are located in Europe. We have never experienced any employment-related stoppages and we consider our employee relations to be good.

Item 1A.Risk Factors

You should carefully consider the risks described below and the other information in this Annual Report on Form 10-K. Our business, prospects, financial condition, or operating results could be harmed by any of these risks, as well as other risks not currently known to us or that we currently consider immaterial. If any of such risks and uncertainties actually occurs, our business, financial condition or operating results could differ materially from the plans, projections and other forward-looking statements included in the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in this report and in our other public filings. The trading price of our common stock could decline due to any of these risks, and, as a result, you may lose all or part of your investment.

Risks Related to Our Business and Our Industry

We do not have enough cash to fund our operations to profitability and if we are unable to secure additional capital, we may be required to seek strategic alternatives, including but not limited to a potential business combination or a sale of our company or our business, or reduce and/or cease our operations and/or seek bankruptcy protection.

We have experienced recurring operating losses and as of December 31, 2017, we had an accumulated deficit of approximately $319 million. Substantially all of our accumulated deficit has resulted from costs incurred in

connection with our operating expenses, research and development expenses and from general and administrative costs associated with our operations, as well as our costs associated with sales and marketing expenses. 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. On December 31, 2017, we had cash and cash equivalents of $4.6 million and net working capital of $3.9 million. This compares to $16.2 million in cash and cash equivalents and a negative net working capital of $13.9 million, respectively, at December 31, 2016. Further, we expect that based on our internal cash flow projections, current cash position and current financial covenants, we will exceed our available cash in March of 2018. We expect that we will have sufficient cash to continue our operations into June of 2018 based on the February 2018 equity raise. In light of our cash position, we may be required to seek strategic alternatives, including but not limited to, strategic partnerships, a potential business combination or a sale of our company or our business. Further, if such strategic alternatives are unavailable to us, we may need to reduce and/or cease our operations, and/or seek bankruptcy protection.

Although we have raised additional capital since December 31, 2017 through other public offerings of our equity securities, if we are unable to generate additional funds in the future through financings, sales of our products, government grants, loans or from other sources or transactions, we will exhaust our resources and will be unable to maintain our currently planned operations. We anticipate incurring substantial additional losses and may never achieve profitability. Additionally, even if we raise sufficient capital through equity or debt financing, strategic alliances or otherwise, there can be no assurances that the revenue or capital infusion will be sufficient to enable us to develop our business to a level where it will be profitable or generate positive cash flow.

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 have 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 $102.2 million for the year ended December 31, 2017, including a non-cash impairment loss and write-off of property, equipment and intangibles asset of $77.6 million, $28.4 million for the year ended December 31, 2016, and $41.2 million for the year ended December 31, 2015. We expect these losses to continue. 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.

If we are unable to continue as a going concern, our securities will have little or no value.

Our continuation as a going concern is dependent on our ability to generate sufficient cash flows from operations and to raise additional capital to meet our obligations. Specifically, we have incurred substantial net losses since our inception and we expect those losses to continue for the foreseeable future. These prior losses and expected future losses have had, and will continue to have, an adverse effect on our financial condition. In addition, our ongoing operations may require us and/or our subsidiaries to raise additional funds, and there are no assurances that such financing will be available on terms acceptable to us, or at all. Our financial statements do not include any adjustments that may result from the outcome of this uncertainty. Although we have raised additional capital since December 31, 2017 through other public offerings of our equity securities, if we are unable to generate additional funds in the future through financings, sales of our products, government grants, loans or from other sources or transactions, we will exhaust our resources and will be unable to maintain our currently planned operations. If we cannot continue as a going concern, our stockholders would likely lose most or all of their investment in us.

The termination of our joint venture with Mitsui may result in additional financial obligations and a number of other challenges that could have a material adverse effect on our business, financial condition and results of operations.

On August 1, 2017, our joint venture agreement with Mitsui was terminated and, as a result, Mitsui will no longer fund any portion of the operations at our Sarnia facility. As a result, we will need to find alternative sources of capital to carry out our activities at the Sarnia facility, which may only be available on less favorable terms. The failure to identify acceptable alternative financing could prevent us from meeting our goal of reaching full production capacity at the Sarnia facility towards the end of 2018 or at all. If we decide to seek out a new joint venture partner or partners to help finance our Sarnia facility, any new joint venture agreement we may enter into could present financial, managerial and operational challenges, including potential disputes with any new joint venture partner, additional liabilities or contingencies and other risks that would not otherwise be present if we developed the Sarnia facility alone. Any disruptions in ramping up our commercial operations at the Sarnia facility and meeting the expectations of our customers could have a material adverse effect on our results of operations.

In addition, in connection with the termination of the joint venture agreement, we agreed to indemnify Mitsui for any payments it makes pursuant to its guarantees under the commercial loan agreement with Comerica Bank, Export Development Canada and Farm Credit Canada and the other parties thereto, or the EDC Loan Agreement and the loan agreement with the Minister of Economic Development and Trade of Ontario, Canada (Sustainable Jobs Innovation Fund), or the SJIF Loan Agreement. Any payments we make pursuant to our indemnification obligations to Mitsui may divert a significant amount of money that we could otherwise use to expand our Sarnia facility and achieve our strategic objectives.

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

We are currently ramping up our first facility in Sarnia, Ontario and we intend to build and operate additional facilities. We have limited experience in operating a commercial-scale production facility, and our technology may not perform as expected in future plants.

There is no guarantee that our Sarnia 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. To date, we have entered into agreements that contemplate, but do not obligate, us to supply approximately 23,000 metric tons of bio-succinic acid and its derivatives per year until the end of 2019, and we are actively seeking to enter into additional supply agreements. Some of 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 future facilities, we may not be able to meet the demands of our customers and our customer relationships and commercialization growth may suffer.

We began operations at our facility in Sarnia, Ontario in October 2015 and we may encounter substantial difficulties in ramping up commercial operations and meeting the expectations of our customers. Because we produce all of our products at our single facility, any disruptions or delays may have a material adverse effect on our business, financial condition and results of operations.

We began commissioning and start-up of our Sarnia facility in March 2015, and started operations in October 2015. Because our facility is the first of its kind, none of our employees have had any prior experience in its operation. As a result, we may experience unforeseen challenges and difficulties and, until the operations stabilize and we obtain more experience operating a commercial scale facility, the Sarnia facility may be more susceptible to start-ups, shutdowns, quality issues, or other delays or disruptions. For example, in the first months of operations at the Sarnia facility, the plant encountered some operational inefficiencies related to human errors, equipment adjustments and minor equipment failures. We cannot know with certainty when or if we will achieve optimized operations. The skills and knowledge gained in operating our large-scale demonstration facility in Pomacle, France may prove insufficient for successful operation of a larger-scale commercial facility, and we may be required to expend significant time and resources to develop our capabilities in commercial facility operations. We may also need to hire new employees or contract with third parties to help manage our operations, and our performance may suffer if we are unable to hire qualified parties or if they perform poorly.

Our operations at our Sarnia, Ontario facility may be adversely affected by changes and events, including the following:

- loss of key talent, including technical and administrative personnel, in operating the facility;
- failure to maintain or timely renew regulatory approvals, including environmental;
- issues with the quality of our products produced at the facility;
- shortages or changes in the price of equipment, materials or labor and related budget overruns;
- adverse changes in the political and/or regulatory environment;
- adverse weather conditions or natural disasters, accidents or other unforeseen events;
- insufficient capital to continue operations at the facility and the inability to obtain additional financing on satisfactory terms or at all;
- workplace health and safety issues at the facility;
- costs associated with the external processing of our co-products;

- issues associated with our environmental emissions, effluents, air and noise; and;
- failure of a key piece of equipment, particularly one with long lead time delivery.

Currently, our only production site is our Sarnia facility. As a result, significant and prolonged disruptions at the facility would have a material adverse effect on our business, financial condition and results of operations. Our operations also may be disrupted by external events such as natural disasters, severe weather conditions, workplace or environmental accidents, mechanical failure, fires, explosions, interruptions of supply, work stoppage, losses of permits or authorizations or acts of terrorism. Some of these events can cause personal injury and loss of life, severe damage to or destruction of property and equipment and environmental damage, and may result in suspension or cessation of operations and the imposition of civil or criminal penalties. 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. We can provide no assurance that we will not incur losses related to these or other events beyond the limits or outside the coverage of our insurance policies. Further, disruptions to our operations could have a material adverse effect on our business and results of operations during the period of time that the facility is not operating.

In addition, we may also experience difficulties in producing sufficient quantities or quality of products or in achieving sufficient quality and manufacturing yield levels. Our Sarnia facility is also subject to risks associated with having single suppliers for certain key inputs, such as sugar, power and steam, so the failure of any of these suppliers to perform as expected, would also have a material adverse effect on our performance and results of operations. If we are unable to successfully operate and manage our manufacturing operations at our Sarnia facility or otherwise fail to meet our manufacturing needs, we may not be able to provide our customers with the quality or quantity of products they require, and thus could lose customers and suffer reduced revenues which may have a material adverse effect on our results of operations.

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

Having only recently completed construction of our Sarnia, Ontario facility, and 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. For example, the total completion cost of this initial phase of our Sarnia facility was revised to approximately $141.5 million, which was above the initial estimated cost of $125.0 million (plus or minus 10%). Additionally, while the Sarnia facility could be expanded in the future beyond its initial nameplate capacity of 30,000 metric tons, the likelihood, timing and size of an eventual expansion will be a function of the timing of construction of our planned second facility as we are unlikely to undertake two construction projects simultaneously.

If we incur future cost overruns, 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. Further, our expansion strategy will require us and/or our subsidiaries to raise additional funds, including through government grants, if available, and the incurrence of additional debt, which may be in the form of interest-free or interest-bearing loans and which may be secured or unsecured. Such additional debt will likely be substantial.

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 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.

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 start-up of our 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 causes all amounts outstanding with respect to the indebtedness to be due and payable immediately. The EDC loan was reclassified as

a current liability, as there is no certainty that we will be able to meet the covenants for the next twelve months. We are also party to certain agreements with governmental entities that provide grants and loans and private lenders in connection with the operation of our Sarnia facility. If we fail to meet any of the covenants contained in these grant and loan agreements, we may be forced to repay grants received and the repayment of the loans may be accelerated. In addition, in connection with the termination of our joint venture agreement with Mitsui, (i) we entered into an Indemnity Agreement with Mitsui, pursuant to which we and BioAmber Sarnia have agreed to indemnify Mitsui for any payments it makes pursuant to its guarantee of our obligations under the EDC Loan Agreement and the SJIF Loan Agreement; (ii) we entered into a Security Agreement pursuant to which we and BioAmber Sarnia agreed to pledge all of our personal property as security for our indemnification under the Indemnity Agreement; and (iii) we agreed with Mitsui that in the event a strategic investor acquires more than 25% of BioAmber, or any investor acquires more than 25% of BioAmber Sarnia, Mitsui will be released from all liability under its guarantee obligations for the EDC Loan Agreement. The above-described provision of our agreements with Mitsui remain subject to the prior consent of our lenders and there can be no assurance that such consent will be obtained or that our lenders will not seek to modify, accelerate or terminate our loan agreements. If we are forced to repay government grants, accelerate the repayment of our loans or if any of our loans is terminated, our assets and cash flow may be insufficient to make such repayments or fund our manufacturing expansion strategy.

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.

To date, all our revenue has been derived from the sale of our bio-succinic acid through product and market development efforts related to our bio-succinic acid product, and we have not made sales of any other products. In order to generate sales of our bio-succinic acid and any future products, we must be able to achieve our production cost targets and produce sufficient quantities of our products, both of which are dependent on our ability to maintain our commercial-scale manufacturing facility and build additional manufacturing operations. If we are not successful in operating existing or constructing additional manufacturing facilities or otherwise increasing our manufacturing capacity, developing products that meet our customers' specifications, further advancing our commercial arrangements with existing customers and gaining new customers, 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 year ended December 31, 2017, 74% of our sales were to three customers. During the year ended December 31, 2016, 71% of our sales were to one customer. In the future, a small number of customers may 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 or a failure to capture additional customers could adversely affect our financial performance.

Our financial obligations are expected to continue to be substantial, and 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. In addition, our financial obligations are expected to continue to be substantial.

We will need to raise additional funds in the future in order to grow our business. We expect that based on our internal cash flow projections, current cash position and current financial covenants, we will exceed our available cash in March of 2018. We expect that we will have sufficient cash to continue our operations into June of 2018 based on the February 2018 equity raise.

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.

Our ongoing operations may require us and/or our subsidiaries to raise additional funds. We may enter into agreements that may require us to expend significant financial resources during the term of such agreements. For example, we recently entered into a non-assertion agreement with Mitsubishi Chemical Corporation, pursuant to which we will be required to pay minimum annual royalties in exchange for their not asserting their patent rights. If we raise funds through the issuance of debt, 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 indebtedness, our lenders could declare all outstanding principal and interest to be due and payable and our secured 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. In addition, if we experience production problems or delays in sales 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. The issuance of additional equity securities could result in dilution to our stockholders and the newly-issued securities may have rights senior to those of the holders of our common stock.

Our continuation as a going concern is dependent on our ability to generate sufficient cash flows from operations and to raise additional capital to meet our obligations. Based on our current operating plan, we anticipate that the net proceeds from our public offerings, a combination of government grants, interest bearing and interest-free loans and our existing cash and cash equivalents, may not be sufficient to enable us to maintain our currently planned operations beyond the next 12 months. We have no additional committed external sources of funds and additional financing may not be available when we need it or may not be available on terms that are favorable to us.

Our ability to execute our business plan is dependent on our ability to generate sufficient cash flows from operations, raise additional capital or refinance our indebtedness to meet our obligations. If adequate funds are not available to us on a timely basis, or at all, we may be unable to fund our debt service obligations and be required to reduce or delay operating and capital expenses as deemed appropriate in order to conserve cash.

We cannot assure you that we would be able to take any of these actions or that any effort to sell additional debt or equity securities would be successful or would raise sufficient funds to meet our financial obligations or finance additional facilities or that these actions would be permitted under the terms of our existing or future debt agreements. 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 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, THF 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, THF and other bio-succinic acid derivatives will be affected by the cost competitiveness of our products, and the possible 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, THF 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.

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 transitioned from an E. coli organism to our yeast for our Sarnia facility operations. 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 have developed 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 Davy for the conversion of succinic acid to BDO and THF. We expect that our ability to maintain and manage these collaborations will be significant factors in the success of our business.

Our ability to maintain and manage partnerships for the funding, construction and operation of our manufacturing facilities is a significant factor in the success of our business. If we lose a strategic partner, we may experience delays in developing and commercializing our products. On August 1, 2017, our joint venture with Mitsui terminated and, as a result, we will no longer have access to Mitsui as a source of funding.

We are working with strategic partners and collaborators through whom we either own or license the technology needed to develop new specialty chemical products. 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.

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 undergo a change of control or assign the rights or obligations under any of our agreements.

Our operations are dependent upon certain raw materials and utilities, principally sugars, 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, hydrogen (in the production of BDO and THF), steam and electricity. In some cases, we do not have long-term supply agreements in place, which may result in supply problems in the future. 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.

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, 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.

In addition, the variable cost of our bio-succinic acid is based significantly on the price of sugars, which can be derived from corn (which we currently principally rely on), wheat, cane 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 failure to successfully introduce improved organisms and feedstocks into our processes could adversely affect our business, financial condition and results of operations.

We intend to introduce improved organisms 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

may not, however, succeed in ramping up our yeast technology in Sarnia 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 plan to use our yeast in future facilities, but the implementation may not be as seamless as we expect, and our yeast may require different operating conditions or otherwise differ from our expectations and design.

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 eighty-five full-time employees as of December 31, 2017. We currently conduct our business in several countries, including the United States, Europe and Canada, and we may continue to expand geographically in the future. We expect our growth to continue and accelerate in connection with our expansion strategy. 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 future manufacturing facilities;
- diversify our product line to leverage our bio-succinic acid for use in multiple value-added products and 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 technologies, funding and construction of our plants and the commercialization of our products; and
- maintain, defend 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.

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. Even if we do enter into definitive agreements, the rights and obligations of the parties may be modified in the future.

We have entered into non-binding letters of intent, memoranda of understanding and other arrangements with future customers and others. We have also entered several non-binding memoranda of understanding with third parties related to our product development efforts. 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 have signed a binding fifteen-year offtake agreement for 1,4 BDO and THF with Vinmar, under which Vinmar has committed to purchase 100% of the BDO and THF produced in our next plant, a 100,000 metric ton per year capacity plant that we plan to build in North America. Vinmar also plans to invest in the BDO plant alongside us. Following the financing, construction and commissioning of the 100,000 metric ton BDO and THF plant, Vinmar will be obligated to purchase 100% of the BDO and THF produced there for 15 years, and we will be obligated to sell exclusively to Vinmar. As part of the agreement, Vinmar has a right of first refusal to invest in and secure 100% of the offtake from a second BDO plant that we would build in the future. While this agreement is binding, our inability to finance and construct the BDO plant would relieve Vinmar of its obligation to purchase BDO and THF under the terms of the offtake agreement. On December 22, 2016, we entered into an amendment to this offtake agreement with Vinmar for 1,4 BDO and THF extended the deadline for achieving the financial close to December 31, 2018. We have signed a

second offtake agreement in July 2014 with Vinmar that covers our next plant, which will have an annual nameplate capacity of 70,000 metric tons per year of bio-succinic acid, with Vinmar committed to off-taking 50,000 metric tons of the bio-succinic acid produced there for 15 years. Vinmar has also committed to offtake 150,000 metric tons of the production from our third plant, which has a planned nameplate capacity of 200,000 metric tons per year. On December 22, 2016, we entered into an amendment to this offtake agreement for bio-succinic acid, which terminated the portion of the offtake agreement related to our Sarnia facility in connection with entering into our non-binding letter of intent with CJCJ, pursuant to which such termination is a requirement of the definitive agreements contemplated by the non-binding letter of intent. In our original agreement, the second and third bio-succinic acid plants had December 31, 2016 and December 31, 2019 deadlines respectively for achieving a financial close. The amendment extended the deadlines for achieving the financial close of the second and third plants to December 31, 2018 and December 31, 2020, respectively. The amendment also removed the predefined production volume and offtake for the second and third bio-succinic acid plants. Vinmar and BioAmber must now agree to the bio-succinic acid capacity and offtake volume of plants two and three, taking into account global supply and demand dynamics. The failure of the parties to agree would allow either party to terminate the portion of the offtake agreement related to the plant in question.

On January 18, 2018 BioAmber signed a waiver with Vinmar allowing Vinmar to sign a single offtake agreement with a third party for bio-BDO produced from a single plant not owned or affiliated with BioAmber. Vinmar has agreed to postpone to December 31, 2019 any right it may have to terminate the offtake agreement for 1,4 BDO.

We expect to enter into collective bargaining with the employees of BioAmber Sarnia, and the results of this process are uncertain.

Following an application for certification recently received and a vote recently held, it is expected that the employees of BioAmber Sarnia Inc., will be unionized in the province of Ontario, Canada, subject to the negotiation and execution of a collective bargaining agreement between BioAmber Sarnia Inc. and the union having filed the application for certification. We have commenced negotiations of a collective bargaining agreement. Any labor-related work stoppage by unionized employees, or employees who become unionized in the future, could limit our ability to operate our business and could increase costs. Any significant increase in labor costs, deterioration of employee relations, slowdowns or work stoppages at our Sarnia facility, whether due to union activities, employee turnover or otherwise, could have a material adverse effect on our financial condition, cash flows and results of operations.

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.

If the price of petroleum and petroleum-based succinic acid and other chemicals declines, the gross margins and or the demand for our products may decrease.

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 facility in Sarnia, Ontario, we anticipate that if the price of oil falls below $30 per barrel for a sustained period of time and corn prices are above $4.00 per bushel, the resulting selling price of our succinic acid would result in lower gross margins and we may be unable to compete on cost with petroleum-based succinic acid products, which would adversely impact our operating results. 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 $26.21 to a high of $112.93 and was $61.64 on February 28, 2018. We expect that prices will continue to fluctuate, and may decline 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, dissuade potential customers from entering into agreements with us to buy our products, and delay or modify our expansion and investment strategies or those of our collaborators. In addition, a sustained drop in oil prices will reduce the price of certain petrochemicals, making it uneconomical to produce them from our bio-succinic acid feedstock. A sustained period of oil prices at or below $30 per barrel could also make it uneconomical to sell bio-succinic acid at the same market price as petroleum-derived adipic acid, thereby slowing the substitution of adipic acid in polyurethane and coatings markets.

The addressable market sizes we believe exists for bio-succinic acid and the products we plan to sell in the future are based on management's estimates and third-party information, and the actual market sizes may be smaller that we believe.

Management's estimates of the addressable market sizes are based on industry reports from 2008 through today, pricing information in the industry reports and from ICIS, publicly available information and management's estimates of what portion of the total market size may be addressable through bio-succinic acid. In many cases, such information and reports differ among sources as to addressable market sizes. While we believe that management's estimates and these sources are reliable, there may be significant differences in actual market size compared to the information presented.

If the addressable markets for bio-succinic acid and the products we plan to sell in the future are smaller than we expect, then it may be more difficult for us to achieve our business plan and to attain profitability and meet our expectations with respect to cash flow.

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 Royal DSM and Roquette Frères S.A., as well as a collaborative venture between BASF SE and Corbion. Competition in the bio-based chemicals business is expanding with the growth of the industry and the evolution of 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. Because of their better capitalization, larger companies will be better-positioned to develop and commercialize new technologies, build new production facilities and install existing or more advanced equipment, which could reduce our market share and harm our business. In addition, our products could face competition from those produced by early-stage companies, such as Genomatica Inc. and Myriant Corporation. Our ability to compete successfully will depend on our ability to deploy and operate our technologies and 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 facility in Sarnia, we will need to obtain and maintain numerous regulatory approvals and permits in order to operate our planned manufacturing facilities. In any given jurisdiction, new legislation could be implemented that would require additional or new 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. We could also experience delays in obtaining approval for the sale of our waste streams as nutrients for animal feed, which would hinder our ability to reduce our cost of goods by restricting our ability to turn a disposal cost into a source of revenue.

We face risks associated with our international business.

We have completed building and are currently operating a manufacturing facility in Sarnia, Ontario, and we plan to build and operate 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;
- 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 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.

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 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 approve the manufacture of any chemical not already included on the DSL. We have secured approval from Environment Canada for our use of yeast in the manufacture of our bio-succinic acid and the derivatives of succinic acid that we plan to commercialize. If Environment Canada requires 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 the REACH chemical regulatory program known. 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 obtained requisite regulatory approvals for the use of our yeast in Canada. Although we have implemented safety procedures for the disposal of yeast 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 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, provincial 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. For example, on February 17, 2017, Jean-Francois Huc, our then-Chief Executive Officer and President resigned from such positions. In addition, in October 2017, we entered into a Separation and Consulting Agreement with Fabrice Orecchioni, our former President and Chief Operations Officer. While Mr. Orecchioni agreed to provide consulting services to us for a period of four months following this termination, there can be no assurance that the departure of Mr. Orecchioni will not have an adverse effect on our business, financial condition and results of operations.

In addition, 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 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, including uncertainty in international trade environment following the United Kingdom's decision to exit from the European Union and the 2016 U.S. elections, 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.

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.

We are subject to income taxes in the United States and Canada. We have incurred significant losses and have only generated taxable income in Canada. As of December 31, 2017, we had approximately $47.5 million of net operating loss carryforwards (or NOLs) in Canada. As of December 31, 2017, we had approximately $150.5 million of U.S. federal tax NOLs. 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. 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 as a result of any offerings that we may undertake, 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. We have a full valuation allowance against our net deferred tax assets.

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. 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 yeast has been approved for use in Canada and has been given the lowest classification in terms of risk, our ability to commercialize our products in the future could be impacted 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.

We identified a material weakness in our internal control over financial reporting as of December 31, 2016 and as of September 30, 2015 and we may identify additional material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If we fail to remediate any material weaknesses or if we otherwise fail to establish and maintain effective control over financial reporting, our ability to accurately and timely report our financial results could be adversely affected.

In connection with the preparation of our consolidated financial statements for the year ended December 31, 2016 and our condensed consolidated financial statements for the quarter ended September 30, 2015, we identified a material weakness in internal control over financial reporting. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our financial statements will not be prevented or detected on a timely basis.

The material weakness identified in our internal control over financial reporting as of September 30, 2015 was in the inappropriate review process of non-routine complex financial instruments that may have embedded derivatives or other provisions that may have complex accounting impacts, and resulted in an error in the accounting treatment of the Legacy Warrants. To remediate the material weakness described above, specific actions were implemented including: improving processes and implementing additional controls around review of new complex financial instruments to identify appropriate accounting treatment and monitoring implication thereafter, and strengthening management’s review controls. Based on the actions taken by the management, we successfully completed the assessment necessary to conclude that the previously identified and disclosed material weakness has been remediated as of March 31, 2016.

The material weakness identified in our internal control over financial reporting as of December 31, 2016 was related to accounting for non-routine or complex transactions, which resulted in an error in the accounting treatment of a complex revenue recognition transaction and in an inadequate financial statements disclosure. In 2017, the same

material weakness was identified relating to our initial evaluation of the recoverability of our long-lived assets and resulted in an error in the identification of an impairment. Our review process for the accounting treatment for non-routine or complex transactions allowed these errors to go undetected, and management has assessed the potential magnitude and concluded that this represents a material weakness in our internal control over financial reporting, but did not result in a material misstatement in our audited consolidated financial statements for the year ended December 31, 2016 and December 31, 2017. We continue our actions to remediate this material weakness including the retention of an accounting firm to provide technical consulting services with respect to complex accounting issues. However, we cannot assure our shareholders that these measures will be sufficient to remediate the material weakness that has been identified or prevent future material weaknesses or significant deficiencies from occurring.

We also cannot assure you that we have identified all of our existing material weaknesses. Our independent registered public accounting firm has not performed an evaluation of our internal control over financial reporting during any period in accordance with the provisions of Sarbanes Oxley. In light of the control deficiencies and the resulting material weakness that were previously identified as a result of the limited procedures performed, we believe that it is possible that, had our independent registered public accounting firm performed an evaluation of our internal control over financial reporting in accordance with the provisions of the Sarbanes Oxley, additional material weaknesses and significant control deficiencies may have been identified.

If we identify future material weaknesses in our internal controls over financial reporting or fail to meet the demands that will be placed upon us as a public company, including the requirements of Sarbanes Oxley, we may be unable to accurately report our financial results, or report them within the timeframes required by law or stock exchange regulations. Under Section 404, we are required to evaluate and determine the effectiveness of our internal control over financial reporting and, beginning with the annual report for the year ended December 31, 2018 (or such earlier date if we cease to be an emerging growth company) if we are not a smaller reporting company as of such time, we may not comply with the auditor attestation requirements on the effectiveness of our internal control over financial reporting. Failure to comply with Section 404 could also potentially subject us to sanctions or investigations by the SEC or other regulatory authorities. We cannot assure that additional material weaknesses will not exist or otherwise be discovered, any of which could adversely affect our reputation, financial condition and results of operations.

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

As a public company and particularly after we cease to be an “emerging growth company”, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and cease to take advantage of certain exemptions from reporting requirements that are available under the JOBS Act, as an “emerging growth company”), we incurred and 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 are subject to rules and regulations that regulate corporate governance practices of public companies, including the Exchange Act, the Sarbanes-Oxley Act, and rules promulgated by the exchanges or markets on which our common stock is or will be listed. The compliance with these public company requirements increased and 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 created new board committees, adopted new internal controls and disclosure controls and procedures, and devoted significant management resources to our SEC reporting requirements. A number of those requirements will require us to carry out activities we have not performed previously. Furthermore, if we are unable to maintain 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), such as that identified in connection with the preparation of our consolidated financial statements for the year ended December 31, 2017, 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. The additional reporting and other obligations imposed on us by these rules and regulations have increased our legal and financial compliance costs and the costs of our related legal, accounting and administrative activities significantly. These increased costs required and will continue to require us to divert a significant amount of money that we could otherwise use to expand our business and achieve our strategic objectives.

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 securities 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 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 stockholder 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 securities less attractive as a result of our choice to rely on these exemptions. If some investors find our securities less attractive as a result, there may be a less active trading market for our securities and the market price of our securities may be more volatile.

We will cease to be an “emerging growth company” at the end of our 2018 fiscal year and are currently an “accelerated filer” under the Exchange Act; therefore, we will be subject to independent auditor attestation for our 2018 fiscal year. Our independent registered public accounting firm will be required to attest to the effectiveness of our internal control over financial reporting pursuant to Section

404 of the Sarbanes-Oxley Act when we cease to be an "emerging growth company" under the JOBS Act unless we become a "non-accelerated filer" under the Exchange Act.

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 securities.

Our management is 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 beginning with the second annual report that we will be required to file with the SEC. However, 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 the preparation of our consolidated financial statements for the year ended December 31, 2016, we identified a material weakness in internal control over financial reporting that, if not corrected, could result in a material misstatement in our financial statements. See "—We identified a material weakness in our internal control over financial reporting as of December 31, 2016 and as of September 30, 2015 and we may identify additional material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If we fail to remediate any material weaknesses or if we otherwise fail to establish and maintain effective control over financial reporting, our ability to accurately and timely report our financial results could be adversely affected." In the future we may have significant deficiencies, which could cause us to fail to meet 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.

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, the market price of our securities and trading volume could decline.

The trading market for our securities relies in part on the research and reports that securities and industry research analysts publish about us, our industry and our business. We cannot assure you that any research analysts will continue to provide research coverage on us or our securities. We do not have any control over these analysts. The market price of our securities and trading volumes could decline if one or more securities or industry analysts downgrade our securities, 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.

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 our company or of investors, which could cause the market price of our securities 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 construction of our additional 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, including producers of petroleum-based chemicals;

- changes in demand for our products, including any seasonal variations in demand and fluctuations due to volatility in the global petroleum market;
- 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;
- departures of executives or other key management employees;
- foreign exchange rate 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.

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 United States 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 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 U.S. 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 United States, 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 for patent applications that we own or in-license from others that cover certain technologies used in, or relating to, our products and processes. 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 Leahy-Smith 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. The Leahy-Smith Act includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted, and may also affect patent litigation. The USPTO has issued regulations and procedures to govern administration of the Leahy-Smith Act, but many of the substantive changes to patent law associated with the Leahy-Smith Act have only recently become effective. Accordingly, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business.

In addition, because patent applications in the United States 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 have started 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 Leahy-Smith 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 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 United States. 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 lawsuits 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. Securing rights to such third party intellectual property, or securing non-enforcement commitments from such third parties, could result in the payment of additional royalty fees in the form of one-time payments and/or running royalties, which would negatively impact our net margins.

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 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 Cargill for our yeast to produce bio-succinic acid and Davy for catalysts and methods for converting our bio-succinic acid into bio-based 1,4 BDO. 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 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.

Risks Related to Our Common Stock

The NYSE and TSX have each suspended trading of our common stock and commenced proceedings to delist our common stock, which could result in adverse consequences.

On September 8, 2017, we received written notice from the NYSE, advising us that we no longer satisfied the continued listing compliance standards set forth under Rule 802.01C of the NYSE Listed Company Manual because the average closing price of our common stock fell below $1.00 over a consecutive thirty-trading day period ending September 6, 2017.

On February 8, 2018, the NYSE notified us that it has suspended trading in our common stock, effective immediately, and has commenced proceedings to delist our common stock from the NYSE. The NYSE took this action when the trading price of our common stock decreased to below $0.16 per share on February 8, 2018. The NYSE, in interpreting the continued listing standards under Section 802.01D of the NYSE's Listed Company Manual, has determined that a trading price of below $0.16 per share is "abnormally low" and, therefore, is cause for suspension of trading and delisting from the NYSE. Our common stock was suspended from trading intra-day on the NYSE on February 8, 2018. The NYSE's application to the SEC to delist our common stock is pending, subject to the completion of applicable procedures. We had a right to appeal to a Committee of the Board of Directors of the Exchange (the 'Committee') the determination to delist the Common Stock, provided that it filed a written request for such a review with the Secretary of the Exchange within ten business days of receiving notice of the delisting determination. We did not file such request within the specified time period. On March 12, 2018, our common stock was delisted from the NYSE, pursuant to the provisions of Rule 12d2-2(b) of the Exchange Act because, in the opinion of the NYSE, our common stock was no longer suitable for continued listing and trading on the Exchange.

On February 12, 2018, the Toronto Stock Exchange, or TSX, notified us that it was reviewing, on an expedited basis, our eligibility for continued listing. This review resulted from the Company not being in a position to obtain the approval of the TSX in connection the Offering. On February 16, 2018, the TSX notified us that it determined to suspend trading in our common stock, effective February 16, 2018, and to delist our securities effective at the close of market on March 16, 2018 and, effective at the close of market on March 16, 2018, our common stock was delisted from the TSX.

The delisting of our common stock from the NYSE and TSX is likely to have adverse consequences including, among others: lower demand and market price for our common stock; adverse publicity; and a reduced interest in our company from investors, analysts and other market participants. In addition, the delisting's may impair our ability to execute on our operational and strategic goals, raise additional capital and attract and retain employees by means of equity compensation.

On February 9, 2018 our common stock started to trade on the OTC Pink Sheets Market.

We intend to apply for the trading of our common stock on another U.S. trading marketplace. We can provide no assurance that our common stock will commence trading on such marketplace (or, if commenced, continue to trade on this market), whether broker-dealers will continue to provide public quotes of our common stock on this market, whether the trading volume of our common stock will be sufficient to provide for a liquid trading market or whether quotes for our common stock may be blocked by this market in the future.

Our common stock is quoted on the OTC "pink sheets" market which does not provide investors with a meaningful degree of liquidity.

Bid quotations for our common stock are available on the OTC "pink sheets," an electronic quotation service for securities traded over-the-counter. Bid quotations on the pink sheets can be sporadic and the pink sheets do not provide any meaningful liquidity to investors. An investor may find it difficult to dispose of shares or obtain accurate

quotations as to the market value of the common stock. Accordingly, investors must be able to bear the financial risk of losing their entire investment in our common stock.

Although we intend to apply for the trading of our common stock on another U.S. trading exchange, there can be no assurance that our common stock will be listed on a national exchange such as The Nasdaq Stock Market, the NYSE or another securities exchange. Failure to list our common stock will negatively affect the ability of our shareholders to sell their shares.

In addition, our stock is subject to the low-priced security or so called “penny stock” rules of the SEC that impose additional sales practice requirements on broker/dealers who sell such securities. Some of such requirements are discussed below.

A broker/dealer selling “penny stocks” must, at least two business (2) days prior to effecting a customer’s first transaction in a “penny stock,” provide the customer with a document containing information mandated by the SEC regarding the risks of investing in our stock, and the broker/dealer must receive a signed and dated written acknowledgement of the customer’s receipt of that document prior to effecting a customer’s first transaction in a “penny stock.”

Subject to limited exceptions, a broker/dealer must obtain information from a customer concerning the customer’s financial situation, investment experience and investment objectives and, based on the information and any other information known by the broker/dealer, the broker/dealer must reasonably determine that transactions in “penny stocks” are suitable for the customer, that the customer has sufficient knowledge and experience in financial matters, and that the customer reasonably may be expected to be capable of evaluating the risks of transactions in “penny stocks.” A broker/dealer must, at least two business (2) days prior to effecting a customer’s first purchase of a “penny stock” send a statement of this determination, together with other disclosures required by the

SEC, to the customer, and the broker/dealer must receive a signed and dated copy of the statement prior to effecting the customer's first purchase of a "penny stock".

A broker/dealer must also, orally or in writing, disclose prior to effecting a customer's transaction in a "penny stock" (and thereafter confirm in writing):

- the bid and offer price quotes in and for the "penny stock," and the number of shares to which the quoted prices apply;
- the brokerage firm's compensation for the trade; and
- the compensation received by the brokerage firm's sales person for the trade.

In addition, subject to limited exceptions, a brokerage firm must send to its customers trading in "penny stocks" a monthly account statement that gives an estimate of the value of each "penny stock" in the customer's account. Accordingly, the Commission's rules may limit the number of potential purchasers of the shares of our common stock.

Resale restrictions on transferring "penny stocks" are sometimes imposed by some states, which may make transaction in our stock more difficult and may reduce the value of the investment. Various state securities laws pose restrictions on transferring "penny stocks" and as a result, investors in our common stock may have the ability to sell their shares of our common stock impaired.

There can be no assurance we will have market makers in our stock. If the number of market makers in our stock should decline, the liquidity of our common stock could be impaired, not only in the number of shares of common stock which could be bought and sold, but also through possible delays in the timing of transactions, and lower prices for the common stock than might otherwise prevail. Furthermore, the lack of market makers could result in persons being unable to buy or sell shares of the common stock on any secondary market.

Our stock price has been and could remain volatile, which could further adversely affect the market price of our stock, our ability to raise additional capital and/or cause us to be subject to securities class action litigation.

The market price of our common stock has historically experienced and may continue to experience significant volatility. Between June 10, 2013 (the date our common stock commenced trading on the NYSE) and December 31, 2017, the sales price of our common stock as reported on the NYSE has fluctuated from a high of $15.29 per share to a low of $0.32. On February 8, 2018, the NYSE notified us that the NYSE has suspended trading in our common stock, effective immediately, and has commenced proceedings to delist the stock from the NYSE and on February 9, 2018, our common stock started to trade on the OTC Pink Sheets Market. On March 27, 2018, the closing sale price of our common stock was $0.04 per share.

Our start of commercial operations of our Sarnia facility, our ability to commence commercial sales and execute on our commercial expansion plan, our quarterly operating results, our perceived prospects, changes in securities analysts'

recommendations or earnings estimates and our ability to meet such estimates, changes in general conditions in the economy or the financial markets, adverse events related to our strategic relationships, significant sales of our common stock by existing stockholders, and other developments affecting us or our competitors could cause the market price of our common stock to fluctuate substantially. In addition, in recent years, the stock market has experienced significant price and volume fluctuations. This volatility has affected the market prices of securities issued by many companies for reasons unrelated to their operating performance and may adversely affect the price of our common stock. Such market price volatility could adversely affect our ability to raise additional capital. In addition, we may be subject to securities class action litigation as a result of volatility in the price of our common stock. On March 18, 2017, a putative securities class action was filed against us in the United States District Court for the Eastern District of New York. This action is still pending and there can be no assurance that we will prevail or that such actions will not require us to pay significant damages or a substantial settlement or expend significant resources in our defense. Moreover, there can be no assurance that other securities class actions will not be filed against us in the future. Securities litigation could result in substantial costs and diversion of management's attention and resources and could harm our stock price, business, prospects, results of operations and financial condition.

Holders of our warrants may be limited in their ability to exercise their warrants for shares of our common stock.

The issuance of common stock upon exercise or conversion of the warrants may not exceed the then-authorized number of shares of common stock under our certificate of incorporation, less the number of shares of common stock then outstanding or reserved for issuance upon exercise or conversion of other convertible securities that are then outstanding. Such limit may be increased by procuring any necessary increase in the number of our authorized shares of common stock or reducing the number of outstanding shares of common stock, including through a reverse split of our common stock. However, there can be no assurance that

we may be able to obtain such increase in our authorized common stock or reduction in the number of our outstanding common stock, each of which requires, among other things, one or more amendments to our certificate of incorporation approved by our stockholders.

The market price of our common stock may be adversely affected by market conditions affecting the stock markets in general

Market conditions may result in volatility in the level of, and fluctuations in, market prices of stocks generally and, in turn, our common stock and sales of substantial amounts of our common stock in the market, in each case being unrelated or disproportionate to changes in our operating performance. Concerns over global stability and economic conditions in the United States and abroad have contributed to the extreme volatility of the markets which may have an effect on the market price of our common stock.

Future sales of common stock or warrants by existing stockholders could cause our stock price to decline and adversely impact the trading price of our common stock.

If our existing stockholders sell, or indicate an intent to sell, substantial amounts of our common stock or warrants in the public market the trading price of our common stock or warrants could decline significantly and may be adversely impacted. We cannot predict the effect, if any, that future public sales of these securities or the availability of these securities for sale will have on the market and trading price of our securities. Holders of 8,488,213 shares of our common stock, including the shares of common stock issuable upon exercise of our stock options and all outstanding warrants, have the right to require us to register these shares under the Securities Act pursuant to a stockholders' agreement. If our existing stockholders sell substantial amounts of our common stock or warrants in the public market, or if the public perceives that such sales could occur, this could have an adverse impact on the market and trading price of our securities, even if there is no relationship between such sales and the performance of our business.

In the future, we may sell additional shares of our common stock to raise capital or issue stock in connection with acquisitions. In addition, a substantial number of shares of our common stock are reserved for issuance upon the exercise of warrants, stock options and the vesting of restricted stock awards. We cannot predict the size of future issuances or the effect, if any, that they may have on the market price for our common stock. The issuance and sale of substantial amounts of common stock, or the perception that such issuances and sales may occur, could adversely affect the market price of our common stock or warrants and impair our ability to raise capital through the sale of additional equity securities.

There are a large number of shares of our common stock underlying outstanding warrants and options, and reserved for issuance under our stock option plan, that may be sold in the market, which could depress the market price of our stock and result in substantial dilution to the holders of our common stock.

Sale or issuance of a substantial number of shares of our common stock in the future could cause the market price of our common stock to decline. It may also impair our ability to obtain additional financing. At March 27, 2018, we had outstanding warrants to purchase approximately 282 million shares ($29.0 million) of our common stock with a weighted average exercise price of $0.10282 per common share. We may also issue further warrants as part of any future financings. In addition, at March 27, 2018, there were approximately 7.2 million shares issuable upon the exercise of stock options granted by us with a weighted average exercise price of $5.54 per share. As of March 27, 2018, there are an additional 1.9 million shares remaining and available for issuance under our stock option plan.

Our warrants to purchase common stock contain anti-dilution adjustment mechanisms that may be triggered by issuances of equity by us at prices below the then-prevailing exercise prices for such warrants.

All of the Legacy Warrants that we issued in June 2009 and April 2011 contain anti-dilution protection in the event that we issue any common stock, securities convertible into common stock, or other securities at a price below the then-existing exercise price of such warrants, with certain exceptions. The anti-dilution protection contains a price adjustment and an adjustment to the number of shares issuable upon exercise of such warrants. This anti-dilution protection was triggered in connection with our underwritten public offerings in 2015 and in 2016, as well as our offerings in August 2017 and February 2018. The issuance of additional securities in connection with the adjustment to the exercise price of such warrants could result in further dilution to our stockholders. In addition, the warrants that we issued in our August 2017 public offering contain full ratchet anti-dilution protection upon the issuance of any common stock or securities

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 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, we are 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.

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 securities 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 securities if the price of our common stock increases.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We have offices in St. Paul, Minnesota, Montreal, Canada and Sarnia, Canada.

Our St. Paul research and development facility consists of approximately 3,000 square feet of office and laboratory space, including a state of the art research and development facility with capabilities in molecular biology, fermentation, analytical chemistry, pilot scale catalysis and purification. We lease this space under an agreement that expires on May 21, 2018.

Our head office is located in Montreal, where we occupy a total of approximately 6,786 square feet of administrative office space under a lease that expires in May 2022. We have the option to extend the term of the lease for an additional five-year period.

We are in commercial operation at our production facility in Sarnia, Ontario, with a nameplate capacity of 30,000 metric tons of bio-succinic acid per year. BioAmber Sarnia has purchased 11.25 acres of land for this facility, and has signed long-term steam and services agreements with Arlanxeo (former LANXESS) to serve the facility.

We believe that our current facilities are suitable and adequate to meet our short term needs.

Item 3. Legal Proceedings

On March 18, 2017, a putative securities class action lawsuit was filed against the company and Messrs. Huc, Orecchioni and Saucier in federal district court in New York alleging violations of the U.S. Exchange Act and the Securities Act. The complaint principally alleges that the prospectus for our January 2017 follow-on public offering failed to disclose the postponement of a large customer order. On June 6, 2017, the Court appointed a lead plaintiff and lead counsel. On August 7, 2017, the lead plaintiff filed an amended complaint. The amended complaint names the company, and Messrs. Huc and Saucier as defendants (Mr. Orecchioni is not named as a defendant). The amended complaint alleges violations of the U.S. Exchange Act. There are no U.S. Securities Act claims alleged in the amended complaint. The amended complaint is premised on allegedly false and misleading fourth quarter 2016 and fiscal year 2016 revenue projections set forth in the prospectuses for our December 2016 and January 2017 public offerings. On October 6, 2017, the defendants filed a motion to dismiss the amended complaint. On December 5, 2017, the lead plaintiff filed a cross-motion for leave to amend the amended complaint (attaching a proposed second amended complaint). Briefing on defendants' motion to dismiss the amended complaint and lead plaintiff's cross-motion for leave to amend the amended complaint and related motions was completed on March 2, 2018. We believe that the suit is without merit and intend to continue to vigorously defend it.

On February 17, 2017, a claim was filed against us by Bridging Finance Inc., or Bridging, in the Superior Court of Justice in the Province of Ontario, Canada, seeking damages for breach of contract or, alternatively, unjust enrichment or, alternatively, on the basis of quantum meruit. The claim alleges, among other things, that we failed to pay certain prepayment penalties, interest, and waiver fees to Bridging in connection with our repayment in January 2017 of the September 2016 demand non-revolving credit facility we entered into with Bridging. The action seeks damages in the amount of approximately CAD$922,000, plus prejudgment and post judgment interest, costs of the proceedings and other relief as the court may provide. On or about April 17, 2017, we filed our Statement of Defence with the Superior Court. We believe that the suit is without merit and intend to vigorously defend it.

We may be, from time to time, involved in the normal course of business in various legal proceedings. SEC rules require the description of material pending legal proceedings, other than ordinary, routine litigation incident to our business, and advise that proceedings ordinarily need not be described if they primarily involve damages claims for amounts (exclusive of interest and costs) not individually exceeding 10% of the current assets of the registrant and its subsidiaries on a consolidated basis. Except as described above, we are not presently a party to any legal proceedings that, if determined adversely to us, would individually or taken together have a material adverse effect on our business, operating results, financial condition or cash flows. There may be claims or actions pending or threatened against us of which we are currently not aware and the ultimate disposition of which would have a material adverse effect on us.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our securities have traded on the New York Stock Exchange, or NYSE, since June 10, 2013, when the units issued in our initial public offering on May 9, 2013 (trading under the symbol "BIOA.U") were split into our common stock, trading under the symbol "BIOA" and our warrants, trading under the symbol "BIOA.WS". In connection with the initiation of the separate trading of our common stock and warrants, the trading of the units was suspended and delisted from NYSE. Prior to our initial public offering, there was no public market for our securities.

On February 8, 2018 the NYSE stopped the trading of our common stock and on March 12, 2018, our common was delisted from the NYSE. On February 16, 2018 the TSX notified us that it determined to suspend trading in our shares of common stock, effective February 16, 2018, and on March 16, 2018, our common stock was delisted from the TSX.

On February 9, 2018 our common stock started trading on the OTC Pink Sheets Market.

The following table shows the high and low sale prices per share of our securities as reported on the NYSE (through February 8, 2018) and OTC Pink Sheets Market (from February 9, 2018) for the periods indicated:

	Common Stock		Warrants	
	High	Low	High	Low
First Quarter 2018 (through March 27, 2018)	$ 0.20	$ 0.04	$-	$-
First Quarter 2017	$ 6.24	$ 2.10	$ 1.00	$ 0.03
Second Quarter 2017	$ 2.88	$ 1.88	$ 0.05	$ 0.01
Third Quarter 2017	$ 2.74	$ 0.32	$-	$-
Fourth Quarter 2017	$ 0.72	$ 0.32	$-	$-
First Quarter 2016	$ 6.59	$ 2.86	$ 2.00	$ 0.69
Second Quarter 2016	$ 4.80	$ 2.86	$ 1.71	$ 0.30
Third Quarter 2016	$ 4.33	$ 2.99	$ 0.50	$ 0.18
Fourth Quarter 2016	$ 6.50	$ 3.55	$ 1.00	$ 0.21

On March 27, 2018, the last reported sale price for our common stock on the OTC Pink Sheets Market was $0.04 per share.

Equity Compensation Plans

The information required by Item 5 of Form 10-K regarding equity compensation is incorporated herein by reference to Item 12 of Part III of this Annual Report.

Dividend Policy

We have never paid or declared any cash dividends on our common stock. We currently intend to retain any cash flow to finance the growth and development of our business, and we do not expect to pay any cash dividends on our common stock in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, restrictions contained in current or future financing instruments and other factors our board of directors deems relevant. In addition, our credit facility contains covenants limiting our ability to pay dividends on our capital stock.

Stockholders

As of March 27, 2018, there were approximately 100 holders of record of our common stock (not including beneficial holders of stock held in street name) and one holder of record of our publicly traded warrants.

Sales of Unregistered Securities

During the year ended December 31, 2017, we issued an aggregate of 44,345 shares of common stock pursuant to the exercise of unregistered warrants to acquire common stock, pursuant to which exercise we received an aggregate of $47,449. The issuance of the shares was exempt from registration by virtue of Section 4(a)(2) of the Securities Act of 1933, as amended.

Purchases of Equity Securities by the Issuer or Affiliated Purchasers

There were no repurchases of shares of common stock made during the year ended December 31, 2017.

Item 6. Selected Financial Data

The following selected consolidated financial data should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations", the consolidated financial statements and related notes, and other financial information included in this Annual Report on Form 10-K.

We derived the consolidated financial data for the years ended December 31, 2017, 2016 and 2015 and as of December 31, 2015 and 2014 from our audited consolidated financial statements, which are included elsewhere in this Annual Report on Form 10-K. We derived the consolidated financial data for the year ended December 31, 2014 and 2013 and as of December 31, 2015, 2014 and 2013 from financial statements which are not included in this Annual Report on Form 10-K. Historical results are not necessarily indicative of the results to be expected in future periods.

	12 Months ended December 31, 2017	12 Months ended December 31, 2016	12 Months ended December 31, 2015	12 Months ended December 31, 2014	12 Months ended December 31, 2013
	(in thousands, except share and per share data)				
Product sales	14,943	8,272	2,172	1,543	2,665
Cost of goods sold excluding depreciation and amortization	22,323	13,667	2,613	6,044	2,689
Operating expenses					
General and administrative	12,350	9,458	10,594	10,655	9,757
Research and development, net (1)	5,467	7,195	20,286	15,156	16,579
Sales and marketing	1,939	2,915	4,002	4,482	4,730
Depreciation of property and equipment and amortization of intangible assets	5,090	4,843	1,080	260	1,165
Impairment loss and write-off of intangible assets	77,580	—	1,141	—	8,619
Foreign exchange loss (gain)	207	(176)	984	151	306
Operating expenses	102,633	24,235	38,087	30,704	41,156
Operating loss	(110,013)	(29,630)	(38,528)	(35,205)	(41,180)
Amortization of deferred financing costs and debt discounts	2,644	3,312	1,079	292	240
Financial (income) charges, net (2)	(9,480)	(750)	1,589	11,789	(13,298)
Grant income	(359)	(4,047)	—	—	—
(Gain) loss on debt extinguishment	(746)	—	—	171	(314)
Equity participation in losses of equity method investments	—	—	1	—	15

Other expenses (income)	32	200	(22)	(183)	—
Loss before income taxes	(102,104)	(28,345)	(41,175)	(47,274)	(27,823)
Income (recovery) taxes	82	26	(4)	75	103
Net loss (2)	$(102,186)	$(28,371)	$(41,171)	$(47,349)	$(27,926)
Net loss attributable to:					
BioAmber Inc. shareholders (2)	(98,151)	(22,478)	(37,226)	(46,474)	$(27,353)
Non-controlling interest	(4,035)	(5,893)	(3,945)	(875)	(573)
	$(102,186)	$(28,371)	$(41,171)	$(47,349)	$(27,926)
Net loss per share attributable to BioAmber Inc. shareholders—basic	$(2.34)	$(0.78)	$(1.52)	$(2.32)	$(1.75)
Weighted-average of common shares outstanding—					
basic	41,948,030	28,665,645	24,499,970	20,016,180	15,590,814

(1) Research and development expenses include some costs of production related to product development and are net of research and development tax credits.

(2) In the third quarter of 2015, we reclassified the legacy warrants from stockholders' equity to liability, with changes in fair value recorded as non-cash financial charges (income) in our consolidated statements of operations and the impact from previous years recorded retrospectively to accumulated deficit. The reclassification was to correct the misapplication of an accounting principle in the third quarter of 2015 and to record the impact from previous years retrospectively. We assessed the impact of this adjustment in previous years to be immaterial.