Gevo, Inc.
Form S-1/A
February 04, 2011
Table of Contents

As filed with the Securities and Exchange Commission on February 4, 2011

Registration No. 333-168792

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 5 to

FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

GEVO, INC.

(Exact name of Registrant as specified in its charter)

Delaware	**8731**	**87-0747704**
(State or other jurisdiction of incorporation or organization)	**(Primary Standard Industrial Classification Code Number)**	**(I.R.S. Employer Identification Number)**

345 Inverness Drive South, Building C, Suite 310, Englewood, CO 80112

(303) 858-8358

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

Patrick R. Gruber, Ph.D.

Chief Executive Officer

Gevo, Inc.

345 Inverness Drive South, Building C, Suite 310

Englewood, CO 80112

(303) 858-8358

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

Copies to:

Deyan Spiridonov

Teri O Brien

Paul, Hastings, Janofsky & Walker LLP

4747 Executive Drive

12th Floor

San Diego, CA 92121

Telephone: (858) 458-3000

Facsimile: (858) 458-3005

David J. Goldschmidt

Skadden, Arps, Slate, Meagher & Flom LLP

Four Times Square

New York, NY 10036

Telephone: (212) 735-3000

Facsimile: (212) 735-2000

Approximate date of commencement of proposed sale to the public:

As soon as practicable after the effective date of this Registration Statement.

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

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

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

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

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

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

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price(1)	Amount of Registration Fee(2)
Common Stock, $0.01 par value	$123,337,500	$8,793.97

(1) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933. Includes the offering price of additional shares that the underwriters have the option to purchase.
(2) Previously paid.

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

Table of Contents

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

PRELIMINARY PROSPECTUS Subject to Completion February 4, 2011

7,150,000 Shares

Common Stock

This is the initial public offering of our common stock. No public market currently exists for our common stock. We are offering all of the 7,150,000 shares of common stock offered by this prospectus. We expect the public offering price to be between $13.00 and $15.00 per share.

Our common stock has been approved for listing on The Nasdaq Global Market, subject to official notice of issuance, under the symbol GEVO.

Investing in our common stock involves a high degree of risk. Before buying any shares, you should carefully read the discussion of material risks of investing in our common stock in Risk factors beginning on page 16 of this prospectus.

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

	Per Share	Total
Public offering price	$	$
Underwriting discounts and commissions	$	$
Proceeds, before expenses, to us	$	$

The underwriters may also purchase up to an additional 1,072,500 shares of our common stock at the public offering price, less the underwriting discounts and commissions payable by us, to cover over-allotments, if any, within 30 days from the date of this prospectus. If the underwriters exercise this option in full, the total underwriting discounts and commissions will be $ and our total proceeds, after underwriting discounts and commissions but before expenses, will be $.

The underwriters are offering the common stock as set forth under Underwriting. Delivery of the shares will be made on or about , 2011.

UBS Investment Bank **Piper Jaffray** **Citi**

Simmons & Company International

Table of Contents

You should rely only on the information contained in this prospectus. We and the underwriters have not authorized anyone to provide you with information different from that contained in this prospectus. We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date on the front cover of this prospectus, or such other dates as are stated in this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

TABLE OF CONTENTS

Conventions That Apply to This Prospectus	i
Prospectus Summary	1
The Offering	11
Summary Historical and Pro Forma Financial Data	13
Risk Factors	16
Forward-Looking Statements	47
Use of Proceeds	49
Dividend Policy	50
Capitalization	51
Dilution	55
Selected Historical Consolidated Financial Data	58
Unaudited Pro Forma Condensed Consolidated Combined Financial Information	61
Management s Discussion and Analysis of Financial Condition and Results of Operations	65
Background and Perspective	95
Business	97
Management	128
Certain Relationships and Related Party Transactions	168
Principal Stockholders	175
Description of Capital Stock	178
Shares Eligible for Future Sale	184
Certain Material United States Federal Income and Estate Tax Consequences to Non-US Holders	186
Underwriting	191
Legal Matters	200
Experts	200
Where You Can Find Additional Information	200
Index to Gevo, Inc. Consolidated Financial Statements	F-1
Index to Agri-Energy Combined Financial Statements	F-57

Table of Contents

Conventions that apply to this prospectus

Unless the context otherwise requires, in this prospectus:

- the company, we, us and our refer to Gevo, Inc. and its subsidiaries, as the context requires;
- MGPY refers to million gallons per year;
- BGPY refers to billion gallons per year;
- SRI refers to SRI Consulting, a division of Access Intelligence, LLC;
- CMAI refers to Chemical Market Associates, Inc.;
- EIA refers to the US Energy Information Association;
- IEA refers to the International Energy Agency;
- RFA refers to the Renewable Fuels Association;
- Nexant refers to Nexant, Inc.; and
- CDTECH refers to Catalytic Distillation Technologies.

Certain market data presented in this prospectus has been derived from data included in various biofuels industry publications, surveys and forecasts, including those generated by SRI, CMAI, the EIA, the IEA, the RFA and Nexant. Certain target market sizes presented in this prospectus have been calculated by us (as further described below) based on such data. We have assumed the correctness and truthfulness of such data, including projections and estimates, when we use them in this prospectus. You should read our cautionary statement in the section entitled Forward-Looking Statements.

With respect to calculation of product market volumes:

Ø

product market volumes are provided solely to show the magnitude of the potential markets for isobutanol and the products derived from it. They are not intended to be projections of our actual isobutanol production or sales;

- product market volume calculations are based on data available for the year 2007 (the most current data available from SRI); and

- volume data with respect to target market sizes is derived from data included in various industry publications, surveys and forecasts generated by SRI, CMAI, the EIA, the IEA and Nexant. We have converted these sizes into volumes of isobutanol as follows:

  - we calculate the size of the market for isobutanol as a gasoline blendstock and oxygenate by multiplying the world gasoline market volume by an estimated 12.5% by volume isobutanol blend ratio;

  - we calculate the size of the specialty chemicals markets by substituting volumes of isobutanol equivalent to the volume of products currently used to serve these markets;

  - we calculate the size of the petrochemicals and hydrocarbon fuels markets by calculating the amount of isobutanol that, if converted into the target products at theoretical yield, would be needed to fully serve these markets (in substitution for the volume of products currently used to serve these markets); and

  - for consistency in measurement, where necessary we convert all market sizes into gallons. Conversion into gallons for the fuels markets is based upon fuel densities identified by Air BP Ltd. and the American Petroleum Institute.

Table of Contents

Prospectus summary

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information you should consider in making your investment decision. You should read this summary together with the more detailed information, including our financial statements and the related notes, appearing elsewhere in this prospectus. You should carefully consider, among other things, the matters discussed in Risk Factors, before making an investment decision.

BUSINESS OVERVIEW

Our company

We are a renewable chemicals and advanced biofuels company. Our strategy is to commercialize biobased alternatives to petroleum-based products using a combination of synthetic biology and chemical technology. In order to implement this strategy, we are taking a building block approach. We intend to produce and sell isobutanol, a four carbon alcohol. Isobutanol can be sold directly for use as a specialty chemical or a value-added fuel blendstock. It can also be converted into butenes using simple dehydration chemistry deployed in the refining and petrochemicals industries today. Butenes are primary hydrocarbon feedstocks that can be employed to create substitutes for the fossil fuels used in the production of plastics, fibers, rubber, other polymers and hydrocarbon fuels. Customer interest in our isobutanol is primarily driven by its potential to serve as a building block to produce alternative sources of raw materials for their products at competitive prices. We believe products made from biobased isobutanol will be subject to less cost volatility than the petroleum-derived products in use today. We believe that the products derived from isobutanol have potential applications in approximately 40% of the global petrochemicals market, representing a potential market for isobutanol of approximately 67 BGPY, based upon volume data from SRI, CMAI and Nexant, and substantially all of the global hydrocarbon fuels market, representing a potential market for isobutanol of approximately 900 BGPY, based upon volume data from the IEA. When combined with a potential specialty chemical market for isobutanol of approximately 1.1 BGPY, based upon volume data from SRI, and a potential fuel blendstock market for isobutanol of approximately 40 BGPY, based upon data from the IEA, the potential global market for isobutanol is approximately 1,008 BGPY.

We also believe that the raw materials produced from our isobutanol will be drop-in products, which means that customers will be able to replace petroleum-derived raw materials with isobutanol-derived raw materials without modification to their equipment or production processes. In addition, the final products produced from our isobutanol-based raw materials will be chemically identical to those produced from petroleum-based raw materials, except that they will contain carbon from renewable sources. We believe that at every step of the value chain, renewable products that are chemically identical to incumbent petrochemical products will have lower market adoption hurdles, as the infrastructure and applications for such products already exist.

In order to produce and sell isobutanol made from renewable sources, we have developed the Gevo Integrated Fermentation Technology®, or GIFT , an integrated technology platform for the efficient production and separation of isobutanol. GIFT consists of two components, proprietary biocatalysts which convert sugars derived from multiple renewable feedstocks into isobutanol through fermentation, and a proprietary separation unit which is designed to continuously separate isobutanol from water during the fermentation process. We developed our technology platform to be compatible with the existing approximately 20 BGPY of global operating ethanol production capacity, as estimated by the RFA. GIFT is designed to allow relatively low capital expenditure retrofits of existing ethanol facilities,

Table of Contents

enabling a rapid and cost-efficient route to isobutanol production from the fermentation of renewable feedstocks. While we are a development stage company that has generated minimal revenue and has experienced net losses since inception, we believe that our cost-efficient production route will enable rapid deployment of our technology platform and allow our isobutanol and the products produced from it to be economically competitive with many of the petroleum-derived products used in the chemicals and fuels markets today.

We expect that the combination of our efficient proprietary technology, our marketing focus on providing substitutes for the raw materials of well-known and widely used products and our relatively low capital investment retrofit approach will mitigate many of the historical issues associated with the commercialization of renewable chemicals and fuels.

Our markets

Relative to petroleum-based products, we expect that chemicals and fuels made from our isobutanol will provide our potential customers with the advantages of lower cost volatility and increased supply options for their raw materials. Our isobutanol, and the products produced from it will also offer our potential customers the additional benefit of being able to market their products as environmentally sensitive.

Our initial commercialization efforts are focused on the following markets:

- **Isobutanol.** Without any modification isobutanol has direct applications as a specialty chemical and a fuel blendstock. In the specialty chemical market, among other things, isobutanol can be sold for immediate use as a solvent. The global market for butanol as a specialty chemical represents approximately 1.1 BGPY, based upon volume data from SRI. In the fuel blendstock market, isobutanol can be used to replace high value blendstocks such as alkylate and can be blended in conjunction with, or as a substitute for, ethanol and other widely-used fuel oxygenates. Our estimate of the global market for isobutanol as a gasoline oxygenate is approximately 40 BGPY, based upon data from the IEA. While isobutanol can be used as a replacement for ethanol, its product properties are significantly differentiated from ethanol. As a gasoline blendstock, isobutanol s low vapor pressure, high energy content and low water solubility versus ethanol make it a valuable product that can be sold directly to refiners and is expected to be compatible with existing engine and industry infrastructure, including pipeline assets. Combined, the total global market for isobutanol as a fuel blendstock and specialty chemical represents approximately 41.1 BGPY. Since our potential customers in these markets would not be required to develop any additional infrastructure to use our isobutanol, we believe that selling into these markets will result in a lower risk profile and produce attractive margins.

- **Plastics, Fibers, Rubber and Other Polymers.** Isobutanol can be converted by our potential customers into a wide variety of hydrocarbons, which form the basis for the production of many products, including: rubber, lubricants, additives, methyl methacrylate, polypropylenes, polyesters and polystyrene, representing an aggregate potential market for isobutanol of approximately 67 BGPY, based upon volume data from SRI, CMAI and Nexant.

- **Hydrocarbon Fuels.** The hydrocarbons that can be produced from isobutanol can be used to manufacture specialty gasoline blendstocks, jet and diesel fuel, as well as other hydrocarbon fuels. The hydrocarbon fuels that can be produced from isobutanol collectively represent a potential market for isobutanol of over 900 BGPY, based upon volume data from the IEA.

Much of the technology necessary to convert isobutanol into plastics, fibers, rubber, other polymers and hydrocarbon fuels is known and practiced in the chemicals industry today. Our technology will allow us to access these large target markets by delivering isobutanol at a cost structure that allows for the adoption of renewable products into markets that were once the exclusive domain of petroleum-based chemicals and fuels.

Table of Contents

The graphic below outlines the variety and magnitude of the markets that we are targeting for the initial commercialization of our isobutanol:

Our biobased isobutanol provides us with substantial opportunities in major markets currently dominated by petroleum-derived products.

The volume figures set forth above have been provided solely to show the magnitude of the potential markets for isobutanol and its derivatives. They are not intended to be projections of our isobutanol production or sales. See Conventions that apply to this prospectus for the basis of our calculations of the volumes of isobutanol that could serve these markets.

Table of Contents

Our commercialization plan

Our strategy of retrofitting existing ethanol production facilities to produce isobutanol allows us to project substantially lower capital outlays and a faster commercial deployment schedule than the construction of new plants. We believe that this retrofit approach will allow us to rapidly expand our isobutanol production capacity in response to customer demand. GIFT is designed to enable the economic production of isobutanol and other alcohols from multiple renewable feedstocks, including grains, sugar cane and cellulosic feedstocks. We expect that our feedstock flexibility will allow our technology to be deployed worldwide and will enable us to offer our customers protection from the raw material cost volatility historically associated with petroleum-based products. As a result, we believe our isobutanol not only offers a compelling value proposition to customers in the chemicals and fuels markets, but should also increase the operating margins of existing ethanol plants.

We plan to align our isobutanol production capacity with specific customer demand. Accordingly, we are developing a pipeline of future customers for our isobutanol and its derivative chemical products across multiple global chemicals and fuels markets. In anticipation of our targeted initial commercial production of isobutanol in the first half of 2012, we have entered into a number of letters of intent and we are negotiating the final terms of several definitive agreements with future customers and partners in the chemicals and fuels markets, including:

- **LANXESS Inc.**, a leading chemicals company;
- **TOTAL PETROCHEMICALS USA, INC.**, an affiliate of TOTAL S.A., a major oil and gas integrated company;
- **Toray Industries, Inc.**, a leader in the development of fibers, plastics and chemicals;
- **United Air Lines, Inc.**, a major commercial airline; and
- **CDTECH**, a leading hydrocarbon technology provider for the petrochemical and refining industry.

In addition, we are in discussions with major refiners that have indicated an interest in forming partnerships with us to manufacture renewable jet fuel using our isobutanol. We also intend to develop relationships with companies that are engineering and piloting the processes necessary to convert isobutanol to biobased jet fuel and then license this technology to refiners and petrochemical companies that intend to use our isobutanol and other biobased butanols for the production of biobased jet fuel.

We are also in discussions with a number of companies that may consider using our isobutanol, without modification, as a specialty chemical or a fuel blendstock. In November 2010, we entered into a non-binding letter of intent with Sasol Chemical Industries Ltd., acting through its Solvents Division, pursuant to which we intend to negotiate the terms of a definitive agreement for the sale and distribution of our isobutanol to be used primarily in solvent applications. This ready market for isobutanol is particularly valuable because the use of isobutanol as a specialty chemical does not require regulatory approval.

We are also actively pursuing commercial relationships with petrochemical manufacturers that have the ability to produce butenes and other hydrocarbon products from our isobutanol and with large brand owners regarding the use of our isobutanol in the production of biobased plastics, fibers, rubber and other polymers. In November 2010, we entered into a non-binding letter of intent with South Hampton Resources, Inc., or SHR, an independent specialty petrochemical manufacturer with over 50 years of experience in toll processing and product development, pursuant to which SHR will develop processes to dehydrate our isobutanol into isobutylene to serve the market for isobutylenes and to further process at least a portion of that isobutylene to produce kerosene for use as a renewable jet fuel blendstock.

Table of Contents

We believe that the relationships described above will contribute to the development of chemical and fuel market applications of our isobutanol. However, there can be no assurance that we will be able to enter into definitive supply or distribution agreements with the potential customers discussed above, or attract customers based on our arrangements with the petrochemical companies and large brand owners discussed above.

We are also currently in discussions with several ethanol plant owners that have expressed an interest in either selling their facilities to us or entering into joint ventures with us to retrofit their plants to produce isobutanol. Collectively, these ethanol plant owners represent over 2.4 BGPY of ethanol capacity. However, there can be no assurance that we will be able to acquire access to ethanol plants from these owners.

We are currently targeting initial commercial production of isobutanol to begin in the first half of 2012. In connection with meeting this target, in August 2010 we entered into an acquisition agreement with Agri-Energy, LLC, Agri-Energy Limited Partnership, CORN-er Stone Ethanol Management, Inc. and CORN-er Stone Farmers Cooperative, referred to collectively as Agri-Energy. In September 2010, we closed the transactions contemplated by the acquisition agreement and acquired a 22 MGPY ethanol production facility in Luverne, Minnesota which we intend to retrofit for isobutanol production. We paid a purchase price of approximately $20.7 million in connection with these transactions. In addition, we acquired and paid for $4.9 million in estimated working capital. We paid the aggregate purchase price from available cash reserves and previously arranged financing.

Additionally, in November 2010 we executed a non-binding letter of intent with a large ethanol producer in the Midwest. This letter of intent contemplates a joint venture between this ethanol producer and us pursuant to which the ethanol producer would provide its existing 50 MGPY ethanol production facility and we would be responsible for retrofitting such facility to produce isobutanol. Upon completion of the retrofit, both parties to the joint venture would receive a portion of the profits from the sale of isobutanol, consistent with our business model. However, there can be no assurance that we will be able to enter into a definitive joint venture agreement with this ethanol producer.

Our production solution

We developed our technology platform to be compatible with the existing approximately 20 BGPY of global operating ethanol production capacity. GIFT is designed to allow relatively low capital expenditure retrofits of existing ethanol facilities, enabling a rapid and cost-efficient route to isobutanol production. GIFT isobutanol production is very similar to existing ethanol production, except that we replace the ethanol producing biocatalyst with our isobutanol producing biocatalyst and we incorporate well-known equipment into the production process to separate and collect the isobutanol. We have designed our production technology to minimize the disruption of ethanol production during the retrofit process, mitigating the costs associated with downtime as the plant is modified.

A commercial engineering study completed in May 2010 by ICM, Inc., or ICM, a leading engineering firm that has designed approximately 60% of the RFA-estimated 12 BGPY US operating ethanol production capacity, projected that each GIFT retrofit process would take approximately 14 months to complete. Following an estimated two-week period to transition to isobutanol production, we expect the corn ethanol facility will be able to produce isobutanol, as well as protein fermentation meal as an animal feed co-product, while operating in substantially the same manner as it did prior to the retrofit. Consistent with the practice typical in conventional corn ethanol production, we intend to market the high-protein, high-energy animal feed that will be produced as a co-product of our isobutanol fermentation process to offset a significant portion of our grain feedstock costs.

Table of Contents

Through an exclusive alliance with ICM, we have successfully demonstrated the production of isobutanol via the retrofit of a 1 MGPY ethanol facility in St. Joseph, Missouri using our first-generation biocatalyst. We plan to secure access to existing ethanol production facilities through direct acquisitions and joint ventures. We will then work with ICM to deploy our technology platform through retrofit of these production facilities. The May 2010 commercial engineering study completed by ICM estimated the capital costs associated with the retrofit of a standard 50 MGPY ICM-designed corn ethanol plant to be approximately $22 to 24 million and the capital costs associated with the retrofit of a standard 100 MGPY ICM-designed corn ethanol plant to be approximately $40 to 45 million. These projected retrofit capital expenditures are substantially less than estimates for new plant construction for the production of advanced biofuels, including cellulosic ethanol.

In September 2010, we acquired a 22 MGPY ethanol production facility in Luverne, Minnesota. Based on ICM s initial evaluation of the Luverne facility, we project capital costs of approximately $17 million to retrofit this plant to produce 18 MGPY of isobutanol. We have begun the project engineering and permitting portion of the Luverne facility retrofit process and expect to begin commercial production of isobutanol at the Luverne facility in the first half of 2012. We then plan to expand our production capacity beyond this facility to produce and sell over 350 million gallons of isobutanol in 2015.

GIFT : Our proprietary biocatalysts, fermentation and recovery process

Our biocatalysts are microorganisms that have been designed to metabolize sugars to produce isobutanol. Our technology team develops these proprietary biocatalysts to efficiently convert fermentable sugars of all types by engineering isobutanol pathways into the biocatalysts, and then minimizing the production of unwanted by-products to improve isobutanol yield and purity, thereby reducing operating costs. Using our first-generation biocatalyst, based on a bacterial platform, we have demonstrated that we can produce isobutanol at key commercial parameters, validating our biotechnology pathways and efficiencies. We are now nearing completion of the development of our second-generation biocatalyst, which uses a yeast platform. This biocatalyst can produce isobutanol from any fuel ethanol feedstock currently in commercial use, including grains (e.g., corn, wheat, sorghum and barley) and sugar cane.

In addition, through an exclusive license and a services arrangement with Cargill, Incorporated, or Cargill, we are working to develop a future-generation yeast biocatalyst specifically designed to efficiently produce isobutanol from the sugars derived from cellulosic feedstocks, including crops that are specifically cultivated to be converted into fuels (e.g., switchgrass), forest residues (e.g., waste wood, pulp and sustainable wood), agricultural residues (e.g., corn stalks, leaves, straw and grasses) and municipal green waste (e.g., grass clippings and yard waste). Our yeast biocatalysts are built upon robust industrial varieties of yeast that are widely used in large-scale fermentation processes, such as ethanol and lactic acid production. We have carefully selected our yeast biocatalyst platforms for their tolerance to isobutanol and other conditions present during an industrial fermentation process, as well as their known utility in large-scale commercial production processes. As a result, we believe our second- and future-generation biocatalysts will be well-suited to produce isobutanol in commercial industrial settings and expect them to equal or exceed the performance of the yeast used in prevailing grain ethanol production processes.

Our proprietary integrated fermentation and recovery process provides enhanced fermentation performance as well as low cost, energy-efficient recovery of isobutanol and other alcohols. GIFT permits the continuous removal of isobutanol as it is formed, allowing our biocatalysts to continue processing sugar into isobutanol at a high rate without being suppressed by rising levels of isobutanol in the fermentor, thereby reducing the time to complete the fermentation. Using our biocatalysts, we have demonstrated that GIFT enables isobutanol fermentation times equal to, or less than that achieved in

Table of Contents

the current conventional production of ethanol. Meeting the conventional ethanol fermentation time is important because it allows us to lower capital expenditures by leveraging the existing ethanol infrastructure. Finally, isobutanol s unique characteristics in conjunction with the GIFT system reduce energy consumption during distillation.

Our competitive strengths

- **Renewable platform molecule to serve multiple large drop-in markets**. We believe that the butenes produced from our isobutanol will serve as renewable alternatives for the production of plastics, fibers, rubber and other polymers which comprise approximately 40% of the global petrochemicals market, and will have potential applications in substantially all of the global hydrocarbon fuels market, enabling our customers to reduce raw material cost volatility, diversify suppliers and improve feedstock security. We believe that we will face reduced market adoption barriers because products derived from our isobutanol are chemically identical to petroleum-derived products, except that they will contain carbon from renewable sources.

- **Proprietary, low cost technology with global applications**. We believe that GIFT is currently the only known biological process to produce isobutanol cost-effectively from renewable carbohydrate sources, which will enable the economic production of hydrocarbon derivatives of isobutanol. Our proprietary separation unit is designed to achieve superior energy efficiency in comparison to other known separation processes for isobutanol and, as a result, reduces energy consumption costs the second largest operating cost component of isobutanol production. Additionally, GIFT is designed to enable the economic production of isobutanol and other alcohols from multiple renewable feedstocks, which will allow our technology to be deployed worldwide.

- **Capital-light commercial deployment strategy optimized for existing infrastructure**. We have designed GIFT to enable capital-light retrofits of existing ethanol facilities, which allows us to leverage the existing approximately 20 BGPY of global operating ethanol production capacity. This approach allows us to project substantially lower capital outlays and a faster commercial deployment schedule than the construction of new plants. Notably, our calculations based on expected costs of retrofit, operating costs, volume of isobutanol production and price of isobutanol suggest that GIFT retrofits will result in an approximate two-year payback period on the capital invested in the retrofit.

- **GIFT demonstrated at commercially relevant scale**. We have completed the retrofit of a 1 MGPY ethanol facility and successfully produced isobutanol at this facility using our first-generation biocatalyst, achieving our commercial targets for concentration, yield and productivity. These operations also demonstrated the effectiveness of our proprietary technology, confirming the fermentation performance of our biocatalyst technology and our ability to effectively separate isobutanol from water as it is produced. Also, we believe that our acquisition of a 22 MGPY ethanol production facility demonstrates the readiness of our technology for commercial deployment and supports our plan to commence initial commercial-scale isobutanol production in the first half of 2012.

- **Strategic relationships with chemicals, fuels and engineering industry leaders**. We have entered into strategic relationships with global industry leaders to accelerate the execution of our commercial deployment strategy both in the US and internationally. A number of our strategic partners are also direct or indirect investors in our company.

- **Experienced team with a proven track record**. Our management team offers an exceptional combination of scientific, operational and managerial expertise, and our CEO, Dr. Patrick Gruber, has spent over 20 years developing and successfully commercializing industrial biotechnology products. Across the company, our employees have 450 combined years of biotechnology, synthetic biology and biobased product experience. Our employees have generated over 300 patent and patent application authorships over the course of their careers, and have played key roles in the commercialization of several successful, large-scale industrial biotechnology projects.

Table of Contents

Our strategy

Our strategy is to commercialize our isobutanol for use directly as a specialty chemical and low vapor pressure fuel blendstock and for conversion into plastics, fibers, rubber, other polymers and hydrocarbon fuels. Key elements of our strategy include:

- **Deploy first commercial production facility**. In September 2010, we acquired a 22 MGPY ethanol production facility in Luverne, Minnesota. We have begun the project engineering and permitting portion of the Luverne facility retrofit process and expect to commence commercial production of approximately 18 MGPY of isobutanol at the Luverne facility in the first half of 2012.

- **Enter into supply agreements with customers to support capacity growth**. We intend to transition the letters of intent that we have already received into firm supply agreements, and then add to our customer pipeline by entering into isobutanol supply agreements for further capacity with additional customers in the refining, specialty chemicals and transportation sectors both in the US and internationally.

- **Expand our production capacity via retrofit of additional existing ethanol facilities**. As we secure supply agreements with customers, we plan to acquire or gain access to additional and larger scale ethanol facilities via acquisitions or joint ventures. We believe that our exclusive alliance with ICM will enhance our ability to rapidly deploy our technology on a commercial scale at these facilities. We plan to acquire access to additional production capacity to enable us to produce and sell over 350 million gallons of isobutanol in 2015.

- **Expand adoption of our isobutanol across multiple applications and markets**. We intend to drive adoption of our isobutanol in multiple US and international chemicals and fuels end-markets by offering a renewable product with superior properties at a competitive price. In addition, we intend to leverage existing and potential strategic partnerships with hydrocarbon companies to accelerate the use of isobutanol as a building block for drop-in hydrocarbons. This strategy will be implemented through direct supply agreements with leading chemicals and fuels companies, as well as through alliances with key technology providers.

- **Align the value chain for our isobutanol by collaborating with large brand owners**. We are developing relationships with large brand owners to purchase products made from our isobutanol by third-party chemicals and fuels companies. For example, we recently entered into a letter of intent with United Air Lines, Inc. to purchase significant quantities of renewable jet fuel made from our isobutanol. We intend to use these relationships to obtain contracts to sell our isobutanol directly into the manufacturing chain that will use our isobutanol as a building block in the production of renewable jet fuel.

- **Incorporate additional feedstocks into our isobutanol production facilities**. Our second-generation biocatalyst can produce isobutanol from any fuel ethanol feedstock currently in commercial use, including grains (e.g., corn, wheat, sorghum and barley) and sugar cane. We are developing a future-generation biocatalyst under contract with Cargill. We believe that this future-generation biocatalyst will enable us to efficiently integrate mixed sugars from cellulosic feedstocks into our production facilities when the technology to separate and break down cellulosic biomass into separate simple sugar molecules becomes commercially available. While our initial focus is to access corn ethanol facilities in the US, the ability of our biocatalyst to produce isobutanol from multiple feedstocks will support our future efforts to expand production of isobutanol into international markets that use sugar cane or other grain feedstocks, either directly or through partnerships.

Table of Contents

Summary risk factors

Our business is subject to numerous risks and uncertainties that you should understand before making an investment decision. These risks are discussed more fully in the section entitled Risk Factors beginning on page 16 of this prospectus. These include:

- we are a development stage company and have not generated any revenues from the sale of isobutanol, and our business may fail if we are not able to successfully commercialize isobutanol and the products derived from it;
- our ability to compete may be adversely affected if we are unsuccessful in defending against any claims by competitors or others that we are infringing upon their intellectual property rights, such as if Butamax Advanced Biofuels LLC, a joint venture between DuPont and BP, is successful in its lawsuit alleging that we are infringing their patent for the production of isobutanol using certain microbial host cells;
- we have incurred losses to date, anticipate continuing to incur losses in the future and may never achieve or sustain profitability;
- we have no experience producing isobutanol at the commercial scale needed for the development of our business, and we will not succeed if we cannot produce commercial quantities of isobutanol in a timely and economic manner;
- our strategy involves accessing and retrofitting existing ethanol production facilities to produce isobutanol and we may not be able to meet the volume demands of our potential customers if we are unable to successfully identify and acquire access to facilities suitable for efficient retrofitting;
- we have no experience retrofitting commercial ethanol production facilities to produce isobutanol or operating commercial isobutanol facilities, and any unexpected delays, operational difficulties, cost-overruns or failures in the retrofit process could slow our commercial production of isobutanol and harm our performance;
- no market currently exists for isobutanol as a fuel, a fuel blendstock or a building block for the production of hydrocarbons, and our business may fail if we are unable to successfully market our isobutanol to potential customers, including refiners and chemical producers;
- we intend to market our isobutanol as a building block in the production of biofuels and biobased alternatives to petroleum-based products, and if the price of oil falls our customers may be unable to produce biobased products that are commercially viable alternatives to petroleum-based products;
- we may not be able to obtain regulatory approval for the use of our isobutanol in the fuels and chemicals markets;
- our ability to compete may be adversely affected if we do not adequately protect our proprietary technologies or if we lose some of our intellectual property rights through costly litigation or administrative proceedings;
- we have agreed to preliminary terms for a number of supply and distribution agreements with future customers, however, none of these agreements are binding and our performance may suffer if we fail to successfully transition these preliminary commitments into definitive supply and distribution agreements or to negotiate sufficient long-term supply agreements for our production of isobutanol;

- we believe that our isobutanol is fully compatible with existing refinery and transportation infrastructure but if our isobutanol proves unsuitable for use in the existing infrastructure, the market adoption of our isobutanol may be adversely affected;

- fluctuations in the price of corn and other feedstocks may affect our cost structure; and

- concerns about genetically engineered products and processes, and similar concerns about feedstocks grown on land that could be used for food production, could limit our revenues.

Table of Contents

Industry overview

Petroleum is a fundamental source of chemicals and fuels, with annual global demand in 2008 estimated at $3.0 trillion, based on data from the IEA and the EIA. Today s organic chemicals and fuels are predominantly derived from petroleum, as it historically has been convenient and inexpensive. However, recent fundamental trends including increasing petroleum demand (especially from emerging markets), limited new supply, price volatility and the changing regulatory framework in the US and internationally with regard to the environmental impact of fossil fuels, has increased the need for economical, renewable and environmentally sensitive alternatives to petroleum at stable prices.

These market developments, combined with advances in synthetic biology and metabolic pathway engineering, have encouraged the convergence between the industrial biotechnology and energy sectors. These new technologies enable the production of flexible platform chemicals, such as isobutanol, from renewable sources instead of fossil fuels, at economically attractive costs. We believe that isobutanol and the products derived from it will have potential applications in approximately 40% of the global petrochemicals market and substantially all of the global fuels market, and that our isobutanol fulfills an immediate need for alternatives to petroleum.

Corporate information

We were incorporated in Delaware in June 2005 under the name Methanotech, Inc. and filed an amendment to our certificate of incorporation changing our name to Gevo, Inc. on March 29, 2006. Our principal executive offices are located at 345 Inverness Drive South, Building C, Suite 310, Englewood, CO 80112, and our telephone number is (303) 858-8358. Our website address is www.gevo.com. Information contained on our website is not incorporated by reference into this prospectus, and you should not consider information contained on our website to be part of this prospectus.

Our logos, Gevo , GIFT and Gevo Integrated Fermentation Technology® and other trademarks or service marks of Gevo, Inc. appearing in this prospectus are the property of Gevo, Inc. This prospectus contains additional trade names, trademarks and service marks of other companies. We do not intend our use or display of other companies trade names, trademarks or service marks to imply relationships with, or endorsement or sponsorship of us by, these other companies.

Table of Contents

The offering

Common stock offered by Gevo	7,150,000 shares (or 8,222,500 shares if the underwriters exercise their option to purchase additional shares in full).
Common stock to be outstanding after this offering.	24,898,802 shares (or 25,971,302 shares if the underwriters exercise their option to purchase additional shares in full).
Proposed Nasdaq Global Market symbol	GEVO
Use of proceeds	We currently intend to use all or a portion of the net proceeds of this offering, together with existing cash and cash equivalents, to acquire access to ethanol facilities through direct acquisition and joint ventures, and retrofit those facilities to produce isobutanol. We completed our acquisition of Agri-Energy in September 2010, at which time Agri-Energy became a subsidiary of Gevo Development, and we do not have agreements or commitments for any other specific acquisitions at this time. A portion of the net proceeds of this offering may be used to complete the retrofit of Agri-Energy s ethanol production facility in Luverne, Minnesota. We may also use a portion of the net proceeds of this offering to fund working capital and other general corporate purposes, which may include paying off certain of our long-term debt obligations, expenses associated with litigation and the costs associated with being a public company. Please see Use of Proceeds.
Risk factors	See Risk Factors starting on page 16 of this prospectus for a discussion of factors you should carefully consider before deciding to invest in our common stock.

The number of shares of common stock to be outstanding after this offering is based on 17,748,802 shares outstanding as of December 31, 2010 and excludes:

- 2,894,265 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2010 at a weighted average exercise price of $2.83 per share;
- 858,000 shares of common stock issuable upon the exercise of outstanding common stock warrants as of December 31, 2010 at an exercise price of $2.70 per share;
- 412,318 shares of common stock issuable upon the exercise of outstanding preferred stock warrants as of December 31, 2010 at a weighted average exercise price of $6.96 per share, based on a Series D-1 preferred stock conversion price that is 60% of an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) (see

11

Table of Contents

Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering), and subject to adjustment to reflect the actual offering price; and

- 2,489,880 shares of common stock reserved for issuance under our 2010 stock incentive plan, which will become effective in connection with the consummation of this offering, assuming that 7,150,000 shares are sold in the offering and assuming a Series D-1 preferred stock conversion price that is 60% of an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) (see Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering), subject to adjustment to reflect the actual offering price.

Except as otherwise indicated, all information in this prospectus assumes:

- the conversion of all of our outstanding shares of preferred stock into 16,588,145 shares of common stock in connection with the consummation of this offering, based on a Series D-1 preferred stock conversion price that is 60% of an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) (see Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering), subject to adjustment to reflect the actual offering price, and the related conversion of all outstanding preferred stock warrants into common stock warrants;

- no exercise of the underwriters option to purchase additional shares; and

- the filing of our amended and restated certificate of incorporation, which will occur in connection with the consummation of this offering.

Certain of our current stockholders, including LANXESS Corporation and Total Energy Ventures International, have indicated an interest in purchasing shares in this offering. However, the underwriters will have the discretion as to whether to sell any shares to these stockholders. In addition, there can be no assurance that these stockholders will ultimately decide to buy shares in this offering.

Table of Contents

Summary historical and pro forma financial data

The following table sets forth a summary of our historical consolidated financial data for the periods ended or as of the dates indicated. We have derived the consolidated statements of operations data for the years ended December 31, 2007, 2008 and 2009 from our audited consolidated financial statements appearing elsewhere in this prospectus. We have derived the consolidated statements of operations data for the nine months ended September 30, 2009 and 2010 and the consolidated balance sheet data as of September 30, 2010 from our unaudited interim consolidated financial statements appearing elsewhere in this prospectus. You should read this table together with our consolidated financial statements and the accompanying notes, Selected Consolidated Financial Data and Management s Discussion and Analysis of Financial Condition and Results of Operations appearing elsewhere in this prospectus. The unaudited interim consolidated financial statements have been prepared on the same basis as the audited annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary to state fairly our financial position as of September 30, 2010 and results of operations for the nine months ended September 30, 2009 and 2010. The summary historical consolidated financial data in this section is not intended to replace our consolidated financial statements and the accompanying notes. Our historical results are not necessarily indicative of our future results.

The following table also sets forth summary unaudited pro forma and unaudited pro forma, as adjusted financial data. This pro forma and pro forma, as adjusted financial data is presented for informational purposes only and does not purport to represent what our consolidated results of operations or financial position actually would have been had the transactions reflected occurred on the dates indicated or to project our financial condition as of any future date or results of operations for any future period. This pro forma and pro forma, as adjusted financial data should be read together with Agri-Energy s financial statements and accompanying notes appearing elsewhere in this prospectus and Management s Discussion and Analysis of Financial Condition and Results of Operations.

Agri-Energy is engaged in the business of producing and selling ethanol and related products through an ethanol plant located in Luverne, Minnesota. We acquired Agri-Energy with the intention of retrofitting the ethanol plant to produce isobutanol. We intend to record revenue from the sale of the ethanol, distiller s grains and other related products produced as part of the ethanol production process during the period of the retrofit of the Agri-Energy facility to isobutanol production. Continued ethanol production during the retrofit will allow us to retain local staff for the future operation of the plant, maintain the equipment and generate cash flow. As the production of ethanol is not our intended business, we intend to continue reporting our operating results as a development stage company during the retrofit process and only intend to report revenue from the sale of ethanol on an interim basis until we begin to generate revenue from sales of isobutanol. Accordingly, the historical operating results of Agri-Energy and the operating results reported during the retrofit to isobutanol production will not be indicative of future operating results for Agri-Energy once isobutanol production commences.

Our Series A-1, Series A-2, Series A-3, Series A-4, Series B, Series C, Series D and Series D-1 preferred stock are collectively referred to as convertible preferred stock for financial reporting purposes and in the financial tables included in this prospectus, as more fully explained in Note 10 to our consolidated financial statements. In other parts of this prospectus, we refer to our Series A-1, Series A-2, Series A-3, Series A-4, Series B, Series C, Series D and Series D-1 preferred stock collectively as preferred stock. For purposes of the disclosure contained in this section, the company, we, us and our refer to Gevo, Inc. and Gevo Development, as the context requires, and include Agri-Energy following the completion of our acquisition on September 22, 2010.

Table of Contents

Consolidated statements of operations data:	Year ended December 31, 2007	2008	2009	Nine months ended September 30, 2009	2010(5)	Pro forma (6) Year ended December 31, 2009	Nine months ended September 30, 2010
Revenues:							
Grant revenue	$ 275,000	$ 208,000	$ 660,000	$ 551,000	$ 1,175,000	$ 660,000	$ 1,175,000
Licensing revenue					138,000		138,000
Ethanol sales and related products					975,000	40,108,000	31,469,000
Total revenues	275,000	208,000	660,000	551,000	2,288,000	40,768,000	32,782,000
Cost of goods sold					(856,000)	(37,179,000)	(28,941,000)
Gross margin	275,000	208,000	660,000	551,000	1,432,000	3,589,000	3,841,000
Operating expenses:							
Research and development	(3,699,000)	(7,376,000)	(10,508,000)	(6,730,000)	(11,432,000)	(10,508,000)	(11,432,000)
Selling, general and administrative	(2,601,000)	(6,065,000)	(8,699,000)	(5,685,000)	(19,114,000)	(10,728,000)	(20,008,000)
Lease termination costs	(894,000)						
Loss on abandonment or disposal of assets	(243,000)	(78,000)	(22,000)	(10,000)		(22,000)	
Total operating expenses	(7,437,000)	(13,519,000)	(19,229,000)	(12,425,000)	(30,546,000)	(21,258,000)	(31,440,000)
Loss from operations	(7,162,000)	(13,311,000)	(18,569,000)	(11,874,000)	(29,114,000)	(17,669,000)	(27,599,000)
Other (expense) income:							
Interest expense	(140,000)	(1,385,000)	(1,103,000)	(798,000)	(1,448,000)	(3,123,000)	(2,957,000)
Interest and other income	76,000	154,000	277,000	247,000	96,000	347,000	251,000
Loss from change in fair value of warrant liabilities(1)			(490,000)	(400,000)	(3,302,000)	(490,000)	(3,302,000)
Other expense net	(64,000)	(1,231,000)	(1,316,000)	(951,000)	(4,654,000)	(3,266,000)	(6,008,000)
Net loss	(7,226,000)	(14,542,000)	(19,885,000)	(12,825,000)	(33,768,000)	(20,935,000)	(33,607,000)
Deemed dividend amortization of beneficial conversion feature on Series D-1 convertible preferred stock					(1,789,000)		(1,789,000)
Net loss attributable to Gevo, Inc. common stockholders	$ (7,226,000)	$ (14,542,000)	$ (19,885,000)	$ (12,825,000)	$ (35,557,000)	$ (20,935,000)	$ (35,396,000)
Net loss per share of common stock attributable to Gevo, Inc. stockholders, basic and diluted	$ (7.40)	$ (13.83)	$ (18.07)	$ (11.70)	$ (31.12)	$ (19.03)	$ (30.98)
Weighted average number of common shares used in computing net loss per share of common stock, basic and diluted	976,909	1,051,848	1,100,294	1,096,095	1,142,498	1,100,294	1,142,498
Net loss used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(2)(3)			$ (19,395,000)		$ (30,466,000)	$ (20,445,000)	$ (30,305,000)
Pro forma net loss per share of common stock, basic and diluted (unaudited)(4)			$ (1.62)		$ (1.91)	$ (1.71)	$ (1.88)

Weighted average number of common shares used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(4)	11,966,689	15,977,487	11,966,689	16,136,629

Table of Contents

(1) On January 1, 2009, we changed the manner in which we account for warrants that are exercisable into preferred stock, as described in Note 18 to our consolidated financial statements.
(2) Net loss used in computing pro forma basic and diluted net loss per share of common stock has been adjusted to add back losses resulting from remeasurement of the convertible preferred stock warrant liability as these measurements would no longer be required when the convertible preferred stock warrants become warrants to purchase shares of the company s common stock.
(3) Net loss used in computing pro forma basic and diluted net loss per share of common stock has been adjusted to remove the deemed dividend associated with the amortization of the beneficial conversion feature on our Series D-1 preferred stock. See Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering.
(4) Pro forma basic and diluted net loss per share of common stock and weighted average number of common shares used in computing pro forma basic and diluted net loss per share of common stock for the year ended December 31, 2009 and the nine months ended September 30, 2010 give effect to the conversion of all of our outstanding convertible preferred stock into common stock (and the related reversal of the deemed dividend associated with the beneficial conversion feature of our Series D-1 preferred stock) and the conversion of all of our preferred stock warrants into common stock warrants (and the reversal of losses resulting from remeasurement of the convertible preferred stock warrant liability as these measurements would no longer be required), in each case, upon completion of this offering, based on a Series D-1 preferred stock conversion price that is 60% of an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus), and subject to adjustment to reflect the actual offering price, as if such conversion has occurred at the beginning of each period or upon issuance, if later. See Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering.
(5) Since Agri-Energy was acquired on September 22, 2010, our consolidated results of operations for the nine months ended September 30, 2010 include the results of operations of Agri-Energy from September 23, 2010 to the period end date.
(6) The pro forma statement of operations data reflects the combined results of operations of the company and Agri-Energy for the year ended December 31, 2009 and the nine months ended September 30, 2010 as if the consummation of the Agri-Energy acquisition had occurred on January 1, 2009.

	As of September 30, 2010(1)		
Consolidated balance sheet data:	**Actual**	**Pro forma(2)**	**Pro forma as adjusted(3)(4)**
Cash and cash equivalents	$ 22,516,000	$ 22,516,000	$ 111,609,000
Working capital	17,461,000	17,461,000	106,554,000
Total assets	57,850,000	57,850,000	146,943,000
Convertible preferred stock warrant liability	3,003,000		
Current and long-term secured debt, net of debt discounts	20,320,000	20,320,000	20,320,000
Convertible preferred stock	146,000		
Gevo, Inc. stockholders equity	25,042,000	28,045,000	117,138,000

(1) Since Agri-Energy was acquired on September 22, 2010, our balance sheet as of September 30, 2010 includes Agri-Energy.
(2) The pro forma consolidated balance sheet data gives effect to (i) the conversion of all of our outstanding convertible preferred stock in connection with the completion of this offering, based on a Series D-1 preferred stock conversion price that is 60% of an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) (see Capitalization Conversion of our Series D-1 Preferred Stock for conversion ratio adjustments that may be applicable upon future events, such as the completion of this offering), which is subject to adjustment to reflect the actual offering price and (ii) conversion of all of our warrants for convertible preferred stock into warrants for common stock and the related reclassification of convertible preferred stock warrant liability to stockholders equity upon the completion of this offering.
(3) The pro forma, as adjusted consolidated balance sheet data gives effect to the items described in footnote (2) above as well as the sale of 7,150,000 shares of common stock in this offering at an assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus), after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.
(4) Each $1.00 increase or decrease in the assumed initial public offering price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) would increase or decrease, as applicable, our pro forma, as adjusted cash and cash equivalents, working capital, total assets and stockholders equity by approximately $6.65 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Table of Contents

Risk factors

Investing in our common stock involves a high degree of risk. You should carefully consider the following risk factors, as well as the other information in this prospectus, before deciding whether to invest in shares of our common stock. The occurrence of any of the events described below could harm our business, financial condition, results of operations and growth prospects. In such an event, the trading price of our common stock may decline and you may lose all or part of your investment.

RISKS RELATING TO OUR BUSINESS AND STRATEGY

We are a development stage company with a history of net losses, and we may not achieve or maintain profitability.

We have incurred net losses since our inception, including losses of $7.2 million, $14.5 million and $19.9 million in 2007, 2008 and 2009, respectively, and $33.8 million for the nine months ended September 30, 2010. As of September 30, 2010, we had an accumulated deficit of $78.0 million. We expect to incur losses and negative cash flow from operating activities for the foreseeable future. We are a development stage company and, to date, our revenues have been extremely limited and we have not generated any revenues from the sale of isobutanol. Historically, our revenues have been primarily derived from government grants and cooperative agreements. Since the completion of the Agri-Energy acquisition we have generated revenue from the sale of ethanol and related products, and we expect to continue to generate revenue from the sale of all such products that are produced prior to the completion of our retrofit. If our existing grants and cooperative agreements are canceled prior to the expected end dates or we are unable to obtain new grants and cooperative agreements, our revenues could be adversely affected. Furthermore, we expect to spend significant amounts on further development of our technology, acquiring or otherwise gaining access to ethanol plants and retrofitting them for isobutanol production, marketing and general and administrative expenses associated with our planned growth and management of operations as a public company. In addition, the cost of preparing, filing, prosecuting, maintaining and enforcing patent, trademark and other intellectual property rights and defending ourselves against claims by others that we may be violating their intellectual property rights may be significant. In particular, over time, the costs of defending the lawsuit filed by Butamax Advanced Biofuels LLC, a joint venture between DuPont and BP for the development and marketing of isobutanol, alleging that we have infringed upon its patent relating to the production of isobutanol, may become significant (as described further in Business Legal Proceedings). As a result, even if our revenues increase substantially, we expect that our expenses will exceed revenues for the foreseeable future. We do not expect to achieve profitability during this period, and may never achieve it. If we fail to achieve profitability, or if the time required to achieve profitability is longer than we anticipate, we may not be able to continue our business. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

Our ability to compete may be adversely affected if we are unsuccessful in defending against any claims by competitors or others that we are infringing upon their intellectual property rights, such as if Butamax Advanced Biofuels LLC, a joint venture between DuPont and BP, is successful in its lawsuit alleging that we are infringing their patent for the production of isobutanol using certain microbial host cells.

The various bioindustrial markets in which we plan to operate are subject to frequent and extensive litigation regarding patents and other intellectual property rights. In addition, many companies in intellectual property-dependent industries, including the renewable energy industry, have employed intellectual property litigation as a means to gain an advantage over their competitors. As a result, we may be required to defend against claims of intellectual property infringement that may be asserted by

Table of Contents

Risk factors

our competitors against us and, if the outcome of any such litigation is adverse to us, it may affect our ability to compete effectively. Currently, we are defending against a lawsuit filed by Butamax Advanced Biofuels LLC, a joint venture between DuPont and BP to develop and market isobutanol, in which it has alleged that we have infringed its patent for certain recombinant microbial host cells that produce isobutanol and methods for the production of isobutanol using such host cells.

Our involvement in litigation, interferences, opposition proceedings or other intellectual property proceedings inside and outside of the US may divert management time from focusing on business operations, could cause us to spend significant amounts of money and may have no guarantee of success. Any current and potential intellectual property litigation also could force us to do one or more of the following:

- stop selling, incorporating, manufacturing or using our products that use the subject intellectual property;
- obtain from a third party asserting its intellectual property rights, a license to sell or use the relevant technology, which license may not be available on reasonable terms, or at all;
- redesign those products or processes, such as our process for producing isobutanol, that use any allegedly infringing or misappropriated technology, which may result in significant cost or delay to us, or which redesign could be technically infeasible; or
- pay damages, including the possibility of treble damages in a patent case if a court finds us to have willfully infringed certain intellectual property rights.

We are aware of a significant number of patents and patent applications relating to aspects of our technologies filed by, and issued to, third parties, including, but not limited to Butamax Advanced Biofuels LLC. We cannot assure you that we will ultimately prevail if any of this third-party intellectual property is asserted against us, or in the current patent infringement lawsuit recently filed by Butamax Advanced Biofuels LLC.

If we are unable to fund our planned retrofit of the ethanol production facility in Luverne, Minnesota, our first commercial production of isobutanol could be delayed.

In September 2010, we acquired ownership of an ethanol production facility in Luverne, Minnesota, which we intend to retrofit to produce isobutanol. We expect to pay much of the retrofit costs with our own funds, but may require additional funding to complete the retrofit. While we anticipate that additional funding for the retrofit may be available from TriplePoint Capital, LLC, or TriplePoint, cost overruns or other unexpected difficulties could cause the retrofit to cost more than we anticipate, which could increase our need for such funding. Such funds may not be available when we need them, on terms that are acceptable to us or at all, which could delay or prevent our initial commercial production of isobutanol.

There is no guarantee we will be able to maintain Agri-Energy s current revenues and profits, and Agri-Energy s financial statements will not be a strong indicator of our future earnings potential.

Because we consummated the Agri-Energy acquisition in September 2010, we have included certain financial statements of Agri-Energy in this prospectus. While we remain a development stage company, Agri-Energy operates a commercial ethanol facility in Luverne, Minnesota, which generates revenues from sales of ethanol and reported net income of approximately $2.0 million for the year ended December 31, 2009. There is no guarantee that we will be able to maintain Agri-Energy s levels of revenue or profit. We plan to retrofit the Luverne facility to produce isobutanol, and our future profitability depends on our ability to produce and market isobutanol, not on continued production and sales of ethanol. Because the risks involved in our isobutanol production are different from those

17

Table of Contents

Risk factors

involved with operating an ethanol production facility, Agri-Energy s financial statements will not be a reliable indicator of our future earnings potential. Furthermore, our planned retrofit will require a significant amount of time. While we believe the facility will be able to continue ethanol production during most of the modification and retrofit process, there is no guarantee that this will be the case and we may need to significantly reduce or halt ethanol production during the modification and/or retrofit. In addition, the retrofit of the Luverne facility will be subject to the risks inherent in the build-out of any manufacturing facility, and we may not be able to produce isobutanol at the volumes, rates and costs we expect following the retrofit. While we believe we will have the ability to reverse the retrofit and switch between ethanol and isobutanol production, the Luverne facility may fail to perform as expected following completion of the retrofit. If we are unable to continue ethanol production during the modification and/or retrofit process or if we are unable to produce isobutanol at the volumes, rates and costs we expect and are unable to switch back to ethanol production, we would be unable to match the facility s current economic performance and our business, financial condition and results of operations would be materially adversely affected.

We may not be successful in the development of individual steps in, or an integrated process for, the production of commercial quantities of isobutanol from plant feedstocks in a timely or economic manner, or at all.

As of the date of this prospectus, we have not produced commercial quantities of isobutanol and we may not be successful in doing so. The production of isobutanol requires multiple integrated steps, including:

- obtaining the plant feedstocks;
- treatment with enzymes to produce fermentable sugars;
- fermentation by organisms to produce isobutanol from the fermentable sugars;
- distillation of the isobutanol to concentrate and separate it from other materials;
- purification of the isobutanol; and
- storage and distribution of the isobutanol.

Our future success depends on our ability to produce commercial quantities of isobutanol in a timely and economic manner. Our biocatalysts have not yet produced commercial volumes of isobutanol. Our largest-scale isobutanol production to date was achieved with our first-generation biocatalyst at ICM s 1 MGPY demonstration facility in St. Joseph, Missouri, and we have produced only small amounts of isobutanol at our mini-plant in Englewood, Colorado with our second-generation biocatalyst. We have focused the majority of our research and development efforts on producing isobutanol from dextrose, and challenges remain in achieving substantial production volumes with other sugars, like corn mash. The risk of contamination and other problems rise as we increase the scale of our isobutanol production. If we are unable to successfully manage these risks, we may encounter difficulties in achieving our target isobutanol production yield, rate, concentration or purity at a commercial scale, which could delay or increase the costs involved in commercializing our isobutanol production. In addition, we have never sourced large quantities of feedstocks and we have no experience storing and/or distributing significant volumes of isobutanol. The technological and logistical challenges associated with each of the processes involved in production, sale and distribution of isobutanol are extraordinary, and we may not be able to resolve any difficulties that arise in a timely or cost effective manner, or at all. Even if we are successful in developing an economical process for converting plant feedstocks into commercial quantities of isobutanol, we may not be able to adapt such process to other biomass raw materials, including cellulosic biomass.

18

Table of Contents

Risk factors

We have estimated the retrofit and operating costs for our initial large-scale commercial isobutanol facility based upon a commercial engineering study completed by ICM in May 2010. Neither we nor ICM have ever built (through retrofit or otherwise) or operated a commercial isobutanol facility. We assume that we understand how the engineering and process characteristics of the 1 MGPY demonstration facility will scale up to larger facilities, but these assumptions may prove to be incorrect. In addition, if existing tax credits, subsidies and other incentives in the US and foreign markets are phased out or reduced, the overall cost of commercialization of isobutanol could increase. Accordingly, we cannot be certain that we can manufacture isobutanol in an economical manner in commercial quantities. If we fail to manufacture isobutanol economically on a commercial scale or in commercial volumes, our commercialization of isobutanol and our business, financial condition and results of operations will be materially adversely affected.

We may not be able to successfully identify and acquire access to ethanol production facilities suitable for efficient retrofitting, or acquire access to sufficient capacity to be commercially viable or meet customer demand.

Our strategy currently includes accessing and retrofitting, either independently or with potential development partners, existing ethanol facilities for the production of large quantities of isobutanol for commercial distribution and sale. We have acquired one 22 MGPY ethanol production facility, and we plan to acquire additional production capacity to enable us to produce and sell over 350 MGPY of isobutanol in 2015. We may not find development partners with whom we can implement this growth strategy, and we may not be able to identify facilities suitable for acquisition, lease or joint venture. Even if we successfully identify a facility suitable for efficient retrofitting, we may not be able to acquire access to such facility in a timely manner, if at all. The owners of the ethanol facility may reach an agreement with another party, refuse to consider an acquisition, lease or joint venture, or demand more or different consideration than we are willing to provide. In particular, if the profitability of ethanol production increases, plant owners may be less likely to consider modifying their production, and thus may be less willing to negotiate with us or agree to allow us to retrofit their facilities for isobutanol production. Even if the owners of the facility are interested in reaching an agreement that grants us access to the plant, negotiations may take longer, or cost more, than we expect, and we may never achieve a final agreement. Even if we are able to access and retrofit several facilities, we may fail to access enough capacity to be commercially viable or meet the volume demands of our customers. Failure to acquire access to sufficient capacity in a timely manner, if at all, may slow or stop our commercialization process and cause our business performance to suffer.

Once we acquire access to ethanol facilities, we may be unable to successfully retrofit them to produce isobutanol, and we may not be able to retrofit them in a timely and cost-effective manner.

For each ethanol production facility to which we acquire access, we will be required to obtain numerous regulatory approvals and permits to retrofit and operate the facility. These include such items as a modification to the air permit, fuel registration with the US Environmental Protection Agency, or EPA, ethanol excise tax registration and others. These requirements may not be satisfied in a timely manner, or at all. Later-enacted federal and state governmental requirements may also substantially increase our costs or delay or prevent the completion of a retrofit, which could have a material adverse effect on our business, financial condition and results of operations.

No two ethanol facilities are exactly alike, and each retrofit will require individualized engineering and design work. There is no guarantee that we or any contractor we retain will be able to successfully design a commercially viable retrofit, or properly complete the retrofit once the engineering plans are completed. Neither we nor ICM has ever built, via retrofit or otherwise, a full-scale commercial

Table of Contents

isobutanol facility. Our estimates of the capital costs that we will need to incur to retrofit a commercial-scale ethanol facility are based upon a commercial engineering study completed by ICM in May 2010. These estimates may prove to be inaccurate, and each retrofit may cost materially more to engineer and build than we currently anticipate. For example, our estimates assume that each plant we retrofit will be performing at full production capacity, and we may need to expend substantial sums to repair underperforming facilities prior to retrofit.

Our retrofit design was developed in cooperation with ICM and is based on ICM technology. There is no guarantee that our retrofit design will be compatible with existing ethanol facilities that do not utilize ICM technology. Before we can retrofit such facilities, we may need to modify them to be compatible with our retrofit design. This may require significant additional expenditure of time and money, and there is no guarantee such modification will be successful.

Furthermore, the retrofit of acquired facilities will be subject to the risks inherent in the build-out of any manufacturing facility, including risks of delays and cost overruns as a result of factors that may be out of our control, such as delays in the delivery of equipment and subsystems or the failure of such equipment to perform as expected once delivered. In addition, we will depend on third-party relationships in expanding our isobutanol production capacity and such third parties may not fulfill their obligations to us under our arrangements with them. Delays, cost-overruns or failures in the retrofit process will slow our commercial production of isobutanol and harm our performance.

Though our initial retrofit design includes the capability to switch between isobutanol and ethanol production, we may be unable to successfully revert to ethanol production after we begin retrofit of an ethanol facility, or the facility may produce ethanol less efficiently or in lower volumes than it did before the retrofit. Thus, if we fail to achieve commercial levels of isobutanol production at a retrofitted facility, we may be unable to rely on ethanol production as an alternative revenue source, which could have a material adverse effect on our prospects.

Our facilities and process may fail to produce isobutanol at the volumes, rates and costs we expect.

Some or all of the facilities we choose to retrofit may be in locations distant from corn or other feedstock sources, which could increase our feedstock costs or prevent us from acquiring sufficient feedstock volumes for commercial production. General market conditions might also cause increases in feedstock prices, which could likewise increase our production costs.

Even if we secure access to sufficient volumes of feedstock, the facilities we retrofit for isobutanol production may fail to perform as expected. The equipment and subsystems installed during the retrofit may never operate as planned. Our systems may prove incompatible with the original facility, or require additional modification after installation. Our biocatalyst may perform less efficiently than it did in testing, if at all. Contamination of plant equipment may require us to replace our biocatalyst more often than expected, or cause our fermentation process to yield undesired or harmful by-products. Likewise, our feedstock may contain contaminants like wild yeast, which naturally ferments feedstock into ethanol. The presence of contaminants, such as wild yeast, in our feedstock could reduce the purity of the isobutanol that we produce and require us to invest in more costly isobutanol separation processes or equipment. Unexpected problems may force us to cease or delay production and the time and costs involved with such delays may prove prohibitive. Any or all of these risks could prevent us from achieving the production throughput and yields necessary to achieve our target annualized production run rates. Failure to achieve these rates, or achieving them only after significant additional expenditures, could substantially harm our commercial performance.

Table of Contents

Risk factors

We may be unable to produce isobutanol in accordance with customer specifications.

Even if we produce isobutanol at our targeted rates, we may be unable to produce isobutanol that meets customer specifications. If we fail to meet specific product or volume specifications contained in a supply agreement, the customer may have the right to seek an alternate supply of isobutanol or terminate the agreement completely. A failure to successfully meet the specifications of our potential customers could decrease demand for our production, and significantly hinder market adoption of our product.

We lack direct experience operating commercial-scale ethanol and isobutanol facilities, and may encounter substantial difficulties operating commercial plants or expanding our business.

We have never operated a commercial isobutanol or ethanol facility. Accordingly, we may encounter significant difficulties operating at a commercial scale. We believe that our facilities will be able to continue producing ethanol during much of the retrofit process. We will need to successfully administer and manage this production. Though ICM is experienced in the operation of ethanol facilities, and our future development partners or the entities that we acquire may likewise have such experience, we may be unable to manage ethanol producing operations, especially given the possible complications associated with a simultaneous retrofit. Once we complete a commercial retrofit, operational difficulties may increase, because neither we nor anyone else has experience operating a pure isobutanol fermentation facility at a commercial scale. The skills and knowledge gained in operating commercial ethanol facilities or small-scale isobutanol plants may prove insufficient for successful operation of a large-scale isobutanol facility, and we may be required to expend significant time and money to develop our capabilities in isobutanol facility operation. We will also need to hire new employees or contract with third parties to help manage our operations, and our performance will suffer if we are unable to hire qualified parties or if they perform poorly.

We may face additional operational difficulties as we further expand our production capacity. Integrating new facilities with our existing operations may prove difficult. Rapid growth, resulting from our operation of, or other involvement with, isobutanol facilities or otherwise, may impose a significant burden on our administrative and operational resources. To effectively manage our growth and execute our expansion plans, we will need to expand our administrative and operational resources substantially and attract, train, manage and retain qualified management, technicians and other personnel. We may be unable to do so. Failure to meet the operational challenges of developing and managing increased isobutanol production, or failure to otherwise manage our growth, may have a material adverse effect on our business, financial condition and results of operations.

We may have difficulty adapting our technology to commercial-scale fermentation which could delay or prevent our commercialization of isobutanol.

While we have succeeded, at the demonstration plant, in reaching our commercial fermentation performance targets for isobutanol concentration, fermentation productivity and isobutanol yield, we have not accomplished this in a commercial plant environment. We have successfully achieved our commercial performance targets using our second-generation biocatalyst at our mini-plant, but have not yet done so at the demonstration plant scale. We are currently working to optimize our second-generation biocatalyst s performance in anticipation of its integration into the demonstration facility, but this process, if it succeeds at all, may take longer or cost more than expected. Even if we are successful in developing and using our second-generation biocatalyst to meet our performance targets at the demonstration facility, this yeast biocatalyst may not be able to meet these targets at a commercial scale retrofitted plant in a timely manner, or ever. In addition, the risk of contamination and other problems rises as we increase the scale of our isobutanol production. If we encounter difficulties in scaling up our

production, our commercialization of isobutanol and our business, financial condition and results of operations will be materially adversely affected.

We may have difficulties gaining market acceptance and successfully marketing our isobutanol to customers, including refiners and chemical producers.

A key component of our business strategy is to market our isobutanol to refiners and chemical producers. If we fail to successfully market our isobutanol to refiners and chemical producers, our business, financial condition and results of operations will be materially adversely affected.

No market currently exists for isobutanol as a fuel or fuel blendstock. Therefore, to gain market acceptance and successfully market our isobutanol to refiners, we must effectively demonstrate the commercial advantages of using isobutanol over other biofuels and blendstocks, as well as our ability to produce isobutanol reliably on a commercial scale at a sufficiently low cost. We must show that isobutanol is compatible with existing infrastructure and does not damage pipes, engines, storage facilities or pumps. We must also overcome marketing and lobbying efforts by producers of other biofuels and blendstocks, including ethanol, many of whom may have greater resources than we do. If the markets for isobutanol as a fuel or fuel blendstock do not develop as we currently anticipate, or if we are unable to penetrate these markets successfully, our revenue and revenue growth rate, if any, could be materially and adversely affected.

We also intend to market our isobutanol to chemical producers for use in making various chemicals such as isobutylene, a type of butene that can be produced through the dehydration of isobutanol. Although a significant market currently exists for isobutylene produced from petroleum, which is widely used in the production of plastics, specialty chemicals, alkylate for gasoline blending and high octane aviation fuel, no one has successfully created isobutylene on a commercial scale from biobased isobutanol. Therefore, to gain market acceptance and successfully market our isobutanol to chemical producers, we must show that our isobutanol can be converted into isobutylene at a commercial scale. As no company currently dehydrates commercial volumes of isobutanol into isobutylene, we must demonstrate the large-scale feasibility of the process and reach agreements with companies that are willing to invest in the necessary dehydration infrastructure. Failure to reach favorable agreements with these companies, or the inability of their plants to convert isobutanol into isobutylene at sufficient scale, will slow our development in the chemicals market and could significantly affect our profitability.

Obtaining market acceptance in the chemicals industry is complicated by the fact that many potential chemicals industry customers have invested substantial amounts of time and money in developing petroleum-based production channels. These potential customers generally have well-developed manufacturing processes and arrangements with suppliers of chemical components, and may display substantial resistance to changing these processes. Pre-existing contractual commitments, unwillingness to invest in new infrastructure, distrust of new production methods and lengthy relationships with current suppliers may all slow market acceptance of isobutanol.

We believe that consumer demand for environmentally sensitive products will drive demand among large brand owners for renewable hydrocarbon sources. One of our marketing strategies is to leverage this demand to obtain commitments from large brand owners to purchase products made from our isobutanol by third parties. We believe these commitments will, in turn, promote chemicals industry demand for our isobutanol. If consumer demand for environmentally sensitive products fails to develop at sufficient scale or if such demand fails to drive large brand owners to seek sources of renewable hydrocarbons, our revenue and growth rate could be materially and adversely affected.

Table of Contents

Risk factors

We may face substantial delay in getting regulatory approvals for use of our isobutanol in the fuels and chemicals markets, which could substantially hinder our ability to commercialize our products.

Commercialization of our isobutanol will require approvals from state and federal agencies. Before we can sell isobutanol as a fuel or fuel blendstock, we must receive EPA fuel certification. We are currently in the first phase of Tier 1 EPA testing, and the approval process may require significant time. Approval can be delayed for years, and there is no guarantee of receiving it. Additionally, California requires that fuels meet both its fuel certification requirements and a separate state low-carbon fuel standard. Any delay in receiving approval will slow or prevent the commercialization of our isobutanol for fuel markets, which could have a material adverse effect on our business, financial condition and results of operations.

Before any biofuel we produce receives a renewable identification number, or RIN, we must register it with the EPA and receive approval that it meets specified regulatory requirements. Delay or failure in developing a fuel that meets the standards for advanced and cellulosic biofuels, or delays in receiving the desired RIN, will make our fuel less attractive to refiners, blenders, and other purchasers, which could harm our competitiveness.

With respect to the chemicals markets, we plan to focus on isobutanol production and sell to companies that can convert our isobutanol into other chemicals, such as isobutylene. However, should we later decide to produce these other chemicals ourselves, we may face similar requirements for EPA and other regulatory approvals. Approval, if ever granted, could be delayed for substantial amounts of time, which could significantly harm the development of our business and prevent the achievement of our goals.

Our isobutanol fermentation process utilizes a genetically modified organism which, when used in an industrial process, is considered a new chemical under the EPA s Toxic Substances Control Act program, or TSCA. The TSCA requires us to comply with the EPA s Microbial Commercial Activity Notice process to operate plants producing isobutanol using our biocatalysts. The TSCA s new chemicals submission policies may change and additional government regulations may be enacted that could prevent or delay regulatory approval of our isobutanol production.

There are various third party certification organizations such as ASTM International, or ASTM, and Underwriters Laboratories, Inc. involved in standard-setting regarding the transportation, dispensing and use of liquid fuel in the US and abroad. These organizations may change and additional requirements may be enacted that could prevent or delay approval of our products. The process of seeking required approvals and the continuing need for compliance with applicable standards may require the expenditure of substantial resources, and there is no guarantee that we will satisfy these standards in a timely manner, if ever.

In addition, to retrofit ethanol facilities and operate the retrofitted plants to produce isobutanol, we will need to obtain and comply with a number of permit requirements. As a condition to granting necessary permits, regulators may make demands that could increase our retrofit or operations costs, and permit conditions could also restrict or limit the extent of our operations, which could delay or prevent our commercial production of isobutanol. We cannot guarantee that we will be able to meet all regulatory requirements or obtain and comply with all necessary permits to complete our planned ethanol plant retrofits, and failure to satisfy these requirements could have a substantial negative effect on our performance.

We are in negotiations, facilitated by the Air Transport Association of America, or ATA, with several major passenger and cargo airlines for potential commitments by several ATA member airlines to

Table of Contents

purchase jet fuel manufactured by third parties from our isobutanol. Jet fuels must meet various statutory and regulatory requirements before they may be used in commercial aviation. In the US, the use of specific jet fuels is regulated by the Federal Aviation Administration, or FAA. Rather than directly approving specific fuels, the FAA certifies individual aircraft for flight. This certification includes authorization for an aircraft to use the types of fuels specified in its flight manual. To be included in an aircraft s flight manual, the fuel must meet standards set by ASTM. The current ASTM requirements do not permit the use of jet fuel derived from isobutanol, and we will need to give ASTM sufficient data to justify creating a new standard applicable to our biojet fuel. Though our work testing isobutanol-based biojet fuel with the US Air Force Research Laboratory has provided us with data we believe ASTM will consider, the process of seeking required approvals and the continuing need for compliance with applicable statutes and regulations will require the expenditure of substantial resources. Failure to obtain regulatory approval in a timely manner, or at all, could have a significant negative effect on our operations.

We may be unable to successfully negotiate final, binding terms related to our current non-binding isobutanol supply and distribution agreements, which could harm our commercial prospects.

We have engaged in negotiations with a number of companies, and have agreed to preliminary terms regarding supplying isobutanol or the products derived from it to various companies for their use or further distribution, including LANXESS Inc., TOTAL PETROCHEMICALS USA, INC., Toray Industries, Inc., Sasol Chemical Industries Ltd. and United Air Lines, Inc. However, none of these agreements are binding, and we have yet to negotiate any final, definitive supply or distribution agreements for our isobutanol. We may be unable to negotiate final terms in a timely manner, or at all, and there is no guarantee that the terms of any final agreement will be the same or similar to those currently contemplated in our preliminary agreements. Final terms may include less favorable pricing structures or volume commitments, more expensive delivery or purity requirements, reduced contract durations and other adverse changes. Delays in negotiating final contracts could slow our initial isobutanol commercialization, and failure to agree to definitive terms for sales of sufficient volumes of isobutanol could prevent us from growing our business. To the extent that terms in our initial supply and distribution contracts may influence negotiations regarding future contracts, the failure to negotiate favorable final terms related to our current preliminary agreements could have an especially negative impact on our growth and profitability. Additionally, as we have yet to produce or supply commercial volumes of isobutanol to any customer, we have not demonstrated that we can meet the production levels contemplated in our current non-binding supply agreements. If our production scale-up proceeds more slowly than we expect, or if we encounter difficulties in successfully completing plant retrofits, potential customers, including those with whom we have current letters of intent, may be less willing to negotiate definitive supply agreements, or demand terms less favorable to us, and our performance may suffer.

Even if we are successful in producing isobutanol on a commercial scale, we may not be successful in negotiating sufficient supply agreements for our production.

We expect that many of our customers will be large companies with extensive experience operating in the fuels or chemicals markets. As a development stage company, we lack commercial operating experience, and may face difficulties in developing marketing expertise in these fields. Our business model relies upon our ability to successfully negotiate and structure long-term supply agreements for the isobutanol we produce, whereby a buyer agrees to purchase all or a significant portion of a plant s isobutanol output for a given time period. Many of our potential customers may be more experienced in these matters than we are, and we may fail to successfully negotiate these agreements in a timely manner or on favorable terms which, in turn, may force us to slow our production, delay our acquiring and retrofitting

Table of Contents

of additional plants, dedicate additional resources to increasing our storage capacity and dedicate additional resources to sales in spot markets. Furthermore, should we become more dependent on spot market sales, our profitability will become increasingly vulnerable to short-term fluctuations in the price and demand for petroleum-based fuels and competing substitutes.

Our isobutanol may encounter physical or regulatory issues which could limit its usefulness as a fuel blendstock.

In the fuel blendstock market, isobutanol can be used in conjunction with, or as a substitute for, ethanol and other widely-used fuel oxygenates and we believe our isobutanol will be physically compatible with typical gasoline engines. However, there is a risk that under actual automotive engine conditions, isobutanol will face significant limitations, making it unsuitable for use in high percentage gasoline blends. Additionally, current regulations limit fuel blends to low percentages of isobutanol, and also limit combination isobutanol-ethanol blends. Government agencies may maintain or even increase the restrictions on isobutanol fuel blends. As we believe that the potential to use isobutanol in higher percentage blends than is feasible for ethanol will be an important factor in successfully marketing isobutanol to refiners, a low blend wall could significantly limit commercialization of isobutanol as a blendstock.

Our isobutanol may be less compatible with existing refining and transportation infrastructure than we believe, which may hinder our ability to market our product on a large scale.

We developed our business model based on our belief that our isobutanol is fully compatible with existing refinery infrastructure. For example, when making isobutanol blends, we believe that gasoline refineries will be able to pump our isobutanol through their pipes and blend it in their existing facilities without damaging their equipment. If our isobutanol proves unsuitable for such handling, it will be more expensive for refiners to use our isobutanol than we anticipate, and they may be less willing to adopt it as a blendstock, forcing us to seek alternative purchasers.

Likewise, our plans for marketing our isobutanol are based upon our belief that it will be compatible with the pipes, tanks and other infrastructure currently used for transporting, storing and distributing gasoline. If our isobutanol or products incorporating our isobutanol cannot be transported with this equipment, we will be forced to seek alternative transportation arrangements, which will make our isobutanol and products produced from our isobutanol more expensive to transport and less appealing to potential customers. Reduced compatibility with either refinery or transportation infrastructure may slow or prevent market adoption of our isobutanol, which could substantially harm our performance.

We may face substantial delay in receiving US Food and Drug Administration approval to sell protein fermentation meal as an animal feedstock, which could substantially increase our net production costs.

Most of the ethanol plants we initially plan to retrofit use dry-milled corn as a feedstock. We plan to sell, as an animal feedstock, the protein fermentation meal left as a co-product of fermenting isobutanol from dry-milled corn. We believe that this will enable us to offset a significant portion of the expense of purchasing corn for fermentation. Before our protein fermentation meal can be used as an animal feedstock, the FDA must approve it as safe for livestock consumption. FDA testing and approval can take a significant amount of time, and there is no guarantee that we will ever receive such approval. If FDA approval is delayed or never obtained, or if we are unable to secure market acceptance for our protein fermentation meal, our net cost of production will increase, which may hurt our operating results.

Table of Contents

Risk factors

Our development strategy relies heavily on our relationship with ICM.

We rely heavily upon our relationship with ICM. In October 2008, we entered into a development agreement and a commercialization agreement with ICM. Pursuant to the terms of the development agreement, ICM engineers helped us install the equipment necessary to test and develop our isobutanol fermentation process at ICM s 1 MGPY ethanol demonstration facility, and ICM agreed to assist us in running and maintaining the converted plant. We currently use the demonstration plant to improve our second-generation biocatalyst and develop processes for commercial-scale production of isobutanol. Under the commercialization agreement, ICM serves as our exclusive engineering, procurement and construction, or EPC, contractor for the retrofit of ICM-designed ethanol plants, and we serve as ICM s exclusive technology partner for the production of butanols, pentanols and propanols from the fermentation of sugars.

Because ICM has designed approximately 60% of the operating ethanol production capacity in the US, we believe that our exclusive alliance with ICM will provide us with a competitive advantage and allow us to more quickly achieve commercial-scale production of isobutanol. However, ICM may fail to fulfill its obligations to us under our agreements and under certain circumstances, such as a breach of confidentiality by us, can terminate the agreements. In addition, ICM may assign the agreements without our consent in connection with a change of control. Since adapting our technology to commercial-scale production of isobutanol and then retrofitting ethanol plants to use our technology is a major part of our commercialization strategy, losing our exclusive alliance with ICM would slow our technological and commercial development. It could also force us to find a new contractor with less experience than ICM in designing and building ethanol plants, or to invest the time and resources necessary to retrofit plants on our own. Such retrofits may be less successful than if performed by ICM engineers, and retrofitted plants might operate less efficiently than expected. This could substantially hinder our ability to expand our production capacity, and could severely impact our performance. If ICM fails to fulfill its obligations to us under our agreements and our competitors obtain access to ICM s expertise, our ability to realize continued development and commercial benefits from our alliance could be affected. Accordingly, if we lose our exclusive alliance with ICM, if ICM terminates or breaches its agreements with us, or if ICM assigns its agreements with us to a competitor of ours or to a third party that is not willing to work with us on the same terms or commit the same resources, our business and prospects could be harmed.

We may require substantial additional financing to achieve our goals, and a failure to obtain this capital when needed or on acceptable terms could force us to delay, limit, reduce or terminate our development and commercialization efforts.

Since our inception, most of our resources have been dedicated towards research and development, as well as demonstrating the effectiveness of our technology at the St. Joseph, Missouri plant. We believe that we will continue to expend substantial resources for the foreseeable future on further developing our technologies and accessing facilities necessary for the production of isobutanol on a commercial scale. These expenditures will include costs associated with research and development, accessing existing ethanol plants, retrofitting the plants to produce isobutanol, obtaining government and regulatory approvals, acquiring or constructing storage facilities and negotiating supply agreements for the isobutanol we produce. In addition, other unanticipated costs may arise. Because the costs of developing our technology at a commercial scale are highly uncertain, we cannot reasonably estimate the amounts necessary to successfully commercialize our production.

To date, we have funded our operations primarily through private equity offerings and the issuance of convertible and nonconvertible debt. We believe that the net proceeds from this offering, together with our existing cash and cash equivalents and government grants, will allow us to take a substantial step toward implementing our strategy. However, based on our current plans and expectations, we will

Table of Contents

Risk factors

require additional funding to achieve our goal of producing and selling over 350 million gallons of isobutanol in 2015. In addition, the cost of preparing, filing, prosecuting, maintaining and enforcing patent, trademark and other intellectual property rights and defending ourselves against claims by others that we may be violating their intellectual property rights may be significant. Currently, we are a defendant to a lawsuit filed by Butamax Advanced Biofuels LLC, a joint venture between DuPont and BP for the development and marketing of isobutanol, alleging that we have infringed upon its patent relating to the production of isobutanol (as described further in Business Legal Proceeding). Moreover, our plans and expectations may change as a result of factors currently unknown to us, and we may need additional funds sooner than planned. We may also choose to seek additional capital sooner than required due to favorable market conditions or strategic considerations.

Our future capital requirements will depend on many factors, including:

- the timing of, and costs involved in developing our technologies for commercial-scale production of isobutanol;
- the timing of, and costs involved in accessing existing ethanol plants;
- the timing of, and costs involved in retrofitting the plants we access with our technologies;
- the cost of operating and maintaining the retrofitted plants;
- our ability to negotiate agreements supplying suitable biomass to our plants, and the timing and terms of those agreements;
- the timing of, and the costs involved in developing adequate storage facilities for the isobutanol we produce;
- our ability to gain market acceptance for isobutanol as a specialty chemical, gasoline blendstock and as a raw material for the production of hydrocarbons;
- our ability to negotiate supply agreements for the isobutanol we produce, and the timing and terms of those agreements;
- our ability to negotiate sales of our isobutanol for commercial-scale production of butenes and other industrially useful chemicals and fuels, and the timing and terms of those sales;
- our ability to sell the protein fermentation meal left as a co-product of fermenting isobutanol from corn as animal feedstock;
- our ability to establish and maintain strategic partnerships, licensing or other arrangements and the timing and terms of those arrangements; and

- the cost of preparing, filing, prosecuting, maintaining, defending and enforcing patent, trademark and other intellectual property claims, including litigation costs and the outcome of such litigation.

Additional funds may not be available when we need them, on terms that are acceptable to us, or at all. If needed funds are not available to us on a timely basis, we may be required to delay, limit, reduce or terminate:

- our research and development activities;

- our plans to access and/or retrofit existing ethanol facilities;

- our production of isobutanol at retrofitted plants; and/or

- our activities in developing storage capacity and negotiating supply agreements that may be necessary for the commercialization of our isobutanol production.

Table of Contents

Risk factors

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

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and licensing arrangements. To the extent that we raise additional capital through the sale or issuance of equity, warrants or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. If we raise capital through debt financing, it may involve agreements that include covenants limiting or restricting our ability to take certain actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through strategic partnerships and licensing agreements with third parties, we may have to relinquish valuable rights to our technologies, or grant licenses on terms that are not favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, limit, reduce or terminate our development and commercialization efforts.

Our quarterly operating results may fluctuate in the future. As a result, we may fail to meet or exceed the expectations of research analysts or investors, which could cause our stock price to decline.

Our financial condition and operating results have varied significantly in the past and may continue to fluctuate from quarter to quarter and year to year in the future due to a variety of factors, many of which are beyond our control. Factors relating to our business that may contribute to these fluctuations are described elsewhere in this prospectus. Accordingly, the results of any prior quarterly or annual periods should not be relied upon as indications of our future operating performance.

If we lose our licensed intellectual property rights we may be unable to continue our business.

We are a party to certain license agreements, including with Cargill, The Regents of the University of California, or The Regents, and the California Institute of Technology, or Caltech, pursuant to which we license key intellectual property. These license agreements impose various diligence, milestone payment, royalty, insurance and other obligations on us. If we fail to comply with any of these obligations, the licensors may have the right to reduce an exclusive license of intellectual property to a nonexclusive license or to terminate the license completely, in which case our competitors may gain access to these important licensed technologies or we may be unable to develop or market products covered by the licensed intellectual property. If we lose rights that are important to our isobutanol production, our business may be materially affected. We may enter into additional licenses in the future, and if we fail to comply with obligations under those agreements, we could suffer similar consequences.

Fluctuations in the price of corn and other feedstocks may affect our cost structure.

Our approach to the biofuels and chemicals markets will be dependent on the price of corn and other feedstocks that will be used to produce isobutanol. A decrease in the availability of plant feedstocks or an increase in the price may have a material adverse effect on our financial condition and operating results. At certain levels, prices may make these products uneconomical to use and produce, as we may be unable to pass the full amount of feedstock cost increases on to our customers.

The price and availability of corn and plant feedstocks may be influenced by general economic, market and regulatory factors. These factors include weather conditions, farming decisions, government policies and subsidies with respect to agriculture and international trade, and global demand and supply. The significance and relative impact of these factors on the price of plant feedstocks is difficult to predict, especially without knowing what types of plant feedstock materials we may need to use.

28

Table of Contents

Risk factors

Fluctuations in the price and availability of natural gas may harm our performance.

The ethanol facilities we plan to retrofit to produce isobutanol, including the Agri-Energy facility in Luverne, Minnesota, use significant amounts of natural gas to produce ethanol. After retrofit with our GIFT technology, these facilities will continue to require natural gas to produce isobutanol. Accordingly, our business is dependent upon natural gas supplied by third parties. Should the price of natural gas increase, our performance could suffer. Likewise, disruptions in the supply of natural gas could have a material impact on our business and results of operations.

Fluctuations in petroleum prices and customer demand patterns may reduce demand for biofuels and biobased chemicals.

We anticipate marketing our biofuel as an alternative to petroleum-based fuels. Therefore, if the price of oil falls, any revenues that we generate from biofuel products could decline, and we may be unable to produce products that are a commercially viable alternative to petroleum-based fuels. Additionally, demand for liquid transportation fuels, including biofuels, may decrease due to economic conditions or otherwise. We will encounter similar risks in the chemicals industry, where declines in the price of oil may make petroleum-based hydrocarbons less expensive, which could reduce the competitiveness of our biobased alternatives.

Changes in the prices of distiller s grains could have a material adverse affect on our financial condition.

We sell distiller s grains as a co-product from the production of ethanol at the Agri-Energy facility in Luverne, Minnesota and we also plan to sell the distiller s grains that will be produced as a co-product of our commercial isobutanol production. Distiller s grains compete with other animal feed products, and decreases in the prices of these other products could decrease the demand for and price of distiller s grains. If the price of distiller s grains decreases, our revenue from the sale of distiller s grains could suffer, which could have a material adverse effect on our financial condition.

To the extent that we produce ethanol at accessed plants before commencing isobutanol production, we will be vulnerable to fluctuations in the price of and cost to produce ethanol.

We believe that the ethanol production facilities we access, including the Agri-Energy facility in Luverne, Minnesota, will continue to produce ethanol during most of the retrofit process. We expect to obtain income from this ethanol production. Our earnings from ethanol revenue will be dependent on the price of, demand for and cost to produce ethanol. Decreases in the price of ethanol, whether caused by decreases in gasoline prices, changes in regulations, seasonal fluctuations or otherwise, will reduce our revenues, while increases in the cost of production will reduce our margins. Many of these risks, including fluctuations in feedstock costs and natural gas costs, are identical to risks we will face in the production of isobutanol. To the extent that ethanol production costs increase or price decreases, earnings from ethanol production could suffer, which could have a material adverse effect on our business.

Reductions or changes to existing regulations and policies may present technical, regulatory and economic barriers, all of which may significantly reduce demand for biofuels or our ability to supply isobutanol.

The market for biofuels is heavily influenced by foreign, federal, state and local government regulations and policies concerning the petroleum industry. For example, in 2007, the US Congress passed an alternative fuels mandate that currently calls for nearly 14 billion gallons of liquid transportation fuels sold in 2011 to come from alternative sources, including biofuels, a mandate that grows to 36 billion

Table of Contents

Risk factors

gallons by 2022. Of this amount, a minimum of 21 billion gallons must be advanced biofuels. In the US and in a number of other countries, these regulations and policies have been modified in the past and may be modified again in the future. Any reduction in mandated requirements for fuel alternatives and additives to gasoline may cause demand for biofuels to decline and deter investment in the research and development of biofuels. Market uncertainty regarding future policies may also affect our ability to develop new biofuels products or to license our technologies to third parties. Any inability to address these requirements and any regulatory or policy changes could have a material adverse effect on our biofuels business, financial condition and results of operations. Our other potential bioindustrial products may be subject to additional regulations.

Additionally, like the ethanol facilities we plan to retrofit, our isobutanol plants will emit greenhouse gasses. Any changes in state or federal emissions regulations, including the passage of cap-and-trade legislation or a carbon tax, could limit our production of isobutanol and protein fermentation meal and increase our operating costs, which could have a material adverse effect on our business, financial condition and results of operations.

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

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

Ø issue additional equity securities which would dilute our current stockholders;

Ø incur substantial debt to fund the acquisitions; or

Ø 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 business, adverse effects on existing business relationships with current and/or prospective partners, customers and/or suppliers, risks associated with entering markets in which we have no or limited prior experience and potential loss of key employees. Other than our acquisition of Agri-Energy, we have not engaged in acquisitions in the past, and do not have experience in managing the integration process. Therefore, 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, 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, financial condition and results of operations may be materially adversely affected.

30

Table of Contents

Risk factors

If we lose key personnel, including key management personnel, or are unable to attract and retain additional personnel, it could delay our product development programs and harm our research and development efforts, we may be unable to pursue partnerships or develop our own products and it may trigger an event of default under our loan agreements with TriplePoint.

Our business is complex and we intend to target a variety of markets. Therefore, it is critical that our management team and employee workforce are knowledgeable in the areas in which we operate. The loss of any key members of our management, including our named executive officers, or the failure to attract or retain other key employees who possess the requisite expertise for the conduct of our business, could prevent us from developing and commercializing our products for our target markets and entering into partnerships or licensing arrangements to execute our business strategy. In addition, the loss of any key scientific staff, or the failure to attract or retain other key scientific employees, could prevent us from developing and commercializing our products for our target markets and entering into partnerships or licensing arrangements to execute our business strategy. We may not be able to attract or retain qualified employees in the future due to the intense competition for qualified personnel among biotechnology and other technology-based businesses, particularly in the advanced biofuels area, or due to the limited availability of personnel with the qualifications or experience necessary for our renewable chemicals and advanced biofuels business. 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 meet the demands of our partners and customers in a timely fashion or to support our internal research and development programs. In particular, our product and process development programs are dependent on our ability to attract and retain highly skilled scientists. Competition for experienced scientists and other technical personnel from numerous companies and academic and other research institutions may limit our ability to do so on acceptable terms. Additionally, certain changes in our management could trigger an event of default under our loan and security agreements with TriplePoint, and we could be forced to pay the outstanding balance of the loan(s) in full. All of our employees are at-will employees, which means that either the employee or we may terminate their employment at any time.

Our planned activities will require additional expertise in specific industries and areas applicable to the products and processes developed through our technology platform or acquired through strategic or other transactions, especially in the end markets that we seek to penetrate. These activities will require the addition of new personnel, and the development of additional expertise by existing personnel. The inability to attract personnel with appropriate skills or to develop the necessary expertise could impair our ability to grow our business.

Our ability to compete may be adversely affected if we do not adequately protect our proprietary technologies or if we lose some of our intellectual property rights through costly litigation or administrative proceedings.

Our success will depend in part on our ability to obtain patents and maintain adequate protection of our intellectual property covering our technologies and products and potential products in the US and other countries. We have adopted a strategy of seeking patent protection in the US and in certain foreign countries with respect to certain of the technologies used in or relating to our products and processes. As such, as of December 31, 2010, we exclusively licensed rights to 73 issued patents and filed patent applications in the US and in various foreign jurisdictions, and we own rights to approximately 184 filed patent applications in the US and in various foreign jurisdictions. When and if issued, patents would expire at the end of their term and any patent would only provide us commercial advantage for a limited period of time, if at all. Our patent applications are directed to our enabling technologies and to our

Table of Contents

Risk factors

methods and products which support our business in the advanced biofuels and renewable chemicals markets. We intend to continue to apply for patents relating to our technologies, methods and products as we deem appropriate.

None of the patent applications that we have filed in the US or in any foreign jurisdictions, and only certain of the patent applications filed by third parties in which we own rights, have been issued. A filed patent application does not guarantee a patent will issue and a patent issuing does not guarantee its validity, nor does it give us the right to practice the patented technology or commercialize the patented product. Third parties may have or obtain rights to blocking patents that could be used to prevent us from commercializing our products or practicing our technology. The scope and validity of patents and success in prosecuting patent applications involve complex legal and factual questions and, therefore, issuance, coverage and validity cannot be predicted with any certainty. Patents issuing from our filed applications may be challenged, invalidated or circumvented. Moreover, third parties could practice our inventions in secret and in territories where we do not have patent protection. Such third parties may then try to sell or import products made using our inventions in and into the US or other territories and we may be unable to prove that such products were made using our inventions. Additional uncertainty may result from potential passage of patent reform legislation by the US Congress and from legal precedent as handed down by the US Court of Appeals for the Federal Circuit and the US Supreme Court, as they determine legal issues concerning the scope, validity and construction of patent claims. Because patent applications in the US and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publication of discoveries in the scientific literature often lags behind the actual discoveries, there is additional uncertainty as to the validity of any patents that may issue and the potential for blocking patents coming into force at some future date. Accordingly, we cannot ensure that any of our currently filed or future patent applications will result in issued patents, or even if issued, predict the scope of the claims that may issue in our and other companies patents. Given that the degree of future protection for our proprietary rights is uncertain, we cannot ensure that: (i) we were the first to make the inventions covered by each of our filed applications, (ii) we were the first to file patent applications for these inventions, (iii) the proprietary technologies we develop will be patentable, (iv) any patents issued will be broad enough in scope to provide commercial advantage and prevent circumvention, and (v) that competitors and other parties do not have or will not obtain patent protection that will block our development and commercialization activities.

These concerns apply equally to patents we have licensed, which may likewise be challenged, invalidated or circumvented, and the licensed technologies may be obstructed from commercialization by competitors blocking patents. In addition, we generally do not control the patent prosecution and maintenance of subject matter that we license from others. Generally, the licensors are primarily or wholly responsible for the patent prosecution and maintenance activities pertaining to the patent applications and patents we license, while we may only be afforded opportunities to comment on such activities. Accordingly, we are unable to exercise the same degree of control over licensed intellectual property as we exercise over our own intellectual property and we face the risk that our licensors will not prosecute or maintain it as effectively as we would like.

In addition, unauthorized parties may attempt to copy or otherwise obtain and use our products or technology. Monitoring unauthorized use of our intellectual property is difficult, particularly where, as here, the end products reaching the market generally do not reveal the processes used in their manufacture, and particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the US, so we cannot be certain that the steps we have taken in obtaining intellectual property and other proprietary rights will prevent unauthorized use of our technology. If competitors are able to use our technology without our authorization, our ability to compete effectively could be adversely affected. Moreover, competitors and other parties such as universities may

Table of Contents

independently develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, the potential competitive advantages provided by our intellectual property may be adversely affected. We may then need to license these competing technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could cause material harm to our business. Accordingly, litigation may be necessary for us to assert claims of infringement, enforce patents we own or license, protect trade secrets or determine the enforceability, scope and validity of the intellectual property rights of others.

Our commercial success also depends in part on not infringing patents and proprietary rights of third parties, and not breaching any licenses or other agreements that we have entered into with regard to our technologies, products and business. We cannot be certain that patents have not or will not issue to third parties that could block our ability to obtain patents or to operate our business as we would like or at all. There may be patents in some countries that, if valid, may block our ability to commercialize products in those countries if we are unsuccessful in circumventing or acquiring rights to these patents. There also may be claims in patent applications filed in some countries that, if granted and valid, may also block our ability to commercialize products or processes in these countries if we are unable to circumvent or license them.

As is commonplace in the biotechnology industries, some of our directors, employees and consultants are or have been employed at, or associated with, companies and universities that compete with us or have or will develop similar technologies and related intellectual property. While employed at these companies, these employees, directors and consultants may have been exposed to or involved in research and technology similar to the areas of research and technology in which we are engaged. Though we have not received such a complaint, we may be subject to allegations that we, our directors, employees or consultants have inadvertently or otherwise used, misappropriated or disclosed alleged trade secrets or confidential or proprietary information of those companies. Litigation may be necessary to defend against such allegations and the outcome of any such litigation would be uncertain.

Under some of our research agreements, our partners share joint rights in certain intellectual property we develop. For example, under our development agreement with ICM we have exclusive rights to all intellectual property developed within the defined scope of the project, but all other intellectual property developed pursuant to the agreement is to be jointly owned. Such provisions may limit our ability to gain commercial benefit from some of the intellectual property we develop, and may lead to costly or time-consuming disputes with parties with whom we have commercial relationships over rights to certain innovations.

If any other party has filed patent applications or obtained patents that claim inventions also claimed by us, we may have to participate in interference proceedings declared by the US Patent and Trademark Office to determine priority of invention and, thus, the right to the patents for these inventions in the US. These proceedings could result in substantial cost to us even if the outcome is favorable. Even if successful, an interference may result in loss of certain claims. Even successful interference outcomes could result in significant legal fees and other expenses, diversion of management time and efforts and disruption in our business. Uncertainties resulting from initiation and continuation of any patent or related litigation could harm our ability to compete.

Our government grants are subject to uncertainty, which could harm our business and results of operations.

We have received various government grants, including a cooperative agreement, to complement and enhance our own resources. We may seek to obtain government grants and subsidies in the future to

Table of Contents

offset all or a portion of the costs of retrofitting existing ethanol manufacturing facilities and research and development activities. We cannot be certain that we will be able to secure any such government grants or subsidies. Any of our existing grants or new grants that we may obtain may be terminated, modified or recovered by the granting governmental body under certain conditions.

We may also be subject to audits by government agencies as part of routine audits of our activities funded by our government grants. As part of an audit, these agencies may review our performance, cost structures and compliance with applicable laws, regulations and standards. Funds available under grants must be applied by us toward the research and development programs specified by the granting agencies, rather than for all of our programs generally. If any of our costs are found to be allocated improperly, the costs may not be reimbursed and any costs already reimbursed may have to be refunded. Accordingly, an audit could result in an adjustment to our revenues and results of operations.

We have received funding from US government agencies, which could negatively affect our intellectual property rights.

Some of our research has been funded by grants from US government agencies. When new technologies are developed with US government funding, the government obtains certain rights in any resulting patents and technical data, generally including, at a minimum, a nonexclusive license authorizing the government to use the invention or technical data for noncommercial purposes. US government funding must be disclosed in any resulting patent applications, and our rights in such inventions will normally be subject to government license rights, periodic progress reporting, foreign manufacturing restrictions and march-in rights. March-in rights refer to the right of the US government, under certain limited circumstances, to require us to grant a license to technology developed under a government grant to a responsible applicant, or, if we refuse, to grant such a license itself. March-in rights can be triggered if the government determines that we have failed to work sufficiently towards achieving practical application of a technology or if action is necessary to alleviate health or safety needs, to meet requirements of federal regulations or to give preference to US industry. If we breach the terms of our grants, the government may gain rights to the intellectual property developed in our related research. The government s rights in our intellectual property may lessen its commercial value, which could adversely affect our performance.

We may not be able to enforce our intellectual property rights throughout the world.

The laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the US. Many companies have encountered significant problems in protecting and enforcing intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to bioindustrial technologies. This could make it difficult for us to stop the infringement of our patents or misappropriation of our other intellectual property rights. Proceedings to enforce our 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.

If our biocatalysts, or the genes that code for our biocatalysts, are stolen, misappropriated or reverse engineered, others could use these biocatalysts or genes to produce competing products.

Third parties, including our contract manufacturers, customers and those involved in shipping our biocatalysts may have custody or control of our biocatalysts. If our biocatalysts, or the genes that code

for our biocatalysts, were stolen, misappropriated or reverse engineered, they could be used by other parties who may be able to reproduce these biocatalysts for their own commercial gain. If this were to occur, it would be difficult for us to discover or challenge this type of use, especially in countries with limited intellectual property protection.

Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

We rely in part on trade secret protection to protect our confidential and proprietary information and processes. However, trade secrets are difficult to protect. We have taken measures to protect our trade secrets and proprietary information, but these measures may not be effective. We require new employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with us. These agreements generally require that all confidential information developed by the individual or made known to the individual by us during the course of the individual s relationship with us be kept confidential and not disclosed to third parties. These agreements also generally provide that know-how and inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, these agreements may not be enforceable, our proprietary information may be disclosed, third parties could reverse engineer our biocatalysts and others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

We may face substantial competition, which could adversely affect our performance and growth.

We may face substantial competition in the markets for isobutanol, plastics, fibers, rubber, other polymers and hydrocarbon fuels. Our competitors include companies in the incumbent petroleum-based industry as well as those in the nascent biorenewable industry. The incumbent petroleum-based industry benefits from a large established infrastructure, production capability and business relationships. The incumbents greater resources and financial strength provide significant competitive advantages that we may not be able to overcome in a timely manner.

The biorenewable industry is characterized by rapid technological change. Our future success will depend on our ability to maintain a competitive position with respect to technological advances. Technological development by others may impact the competitiveness of our products in the marketplace. Competitors and potential competitors who have greater resources and experience than we do may develop products and technologies that make ours obsolete or may use their greater resources to gain market share at our expense.

In the gasoline blendstock market, we will compete with renewable ethanol producers (including those working to produce ethanol from cellulosic feedstocks), producers of alkylate from petroleum and producers of other blendstocks, all of whom may reduce our ability to obtain market share or maintain our price levels.

Significant competitors in these areas include Codexis, Inc., which is engaged with Equilon Enterprises LLC dba Shell Oil Products US, or Shell, in a research and development collaboration under which they are developing biocatalysts for use in producing advanced biofuels; Novozymes A/S, which has partnered with a number of companies and organizations on a regional basis to develop or produce biofuels, and recently opened a biofuel demonstration plant with Inbicon A/S of Denmark; Danisco A/S/Genencor,

Table of Contents

Risk factors

which has formed a joint venture with E.I. Du Pont De Nemours and Company, or DuPont, called DuPont Danisco Cellulosic Ethanol LLC, and is marketing a line of cellulases to convert biomass into sugar; Royal DSM N.V., which received a grant from the US Department of Energy to be the lead partner in a technical consortium including Abengoa Bioenergy New Technologies, Inc., and is developing cost-effective enzyme technologies; Mascoma Corporation, which has entered into a feedstock processing and lignin supply agreement with Chevron Technology Ventures, a division of Chevron USA., Inc.; and BP, p.l.c., or BP, which has purchased Vercipia Biofuels, LLC and technology from Verenium Corporation to develop a commercial-scale cellulosic ethanol facility. Range Fuels, Inc. is also focused on developing non-biocatalytic thermochemical processes to convert cellulosic biomass into fuels, and Coskata, Inc. is developing a hybrid thermochemical-biocatalytic process to produce ethanol from a variety of feedstocks.

In the production of cellulosic b