CODEXIS INC
Form S-1/A
April 05, 2010
Table of Contents

As filed with the Securities and Exchange Commission on April 5, 2010

Registration No. 333-164044

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 7

TO

FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

CODEXIS, INC.

(Exact name of Registrant as specified in its charter)

Delaware	**8731**	**71-0872999**
(State or other jurisdiction of incorporation or organization)	*(Primary Standard Industrial Classification Code Number)*	*(I.R.S. Employer Identification Number)*

200 Penobscot Drive, Redwood City, CA 94063

(650) 421-8100

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

Douglas T. Sheehy

Senior Vice President, General Counsel and Secretary

Codexis, Inc.

200 Penobscot Drive

Redwood City, CA 94063

(650) 421-8100

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

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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 Offering Price Per Share**	**Proposed Maximum Aggregate Offering Price(1)**	**Amount of Registration Fee(2)**
Common Stock, $0.0001 par value	$15.00	$103,500,000	$7,380

(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) The registrant previously paid a registration fee of $3,930 with a registration statement on Form S-1, File No. 333-150224, initially filed with the Commission on April 14, 2008. Pursuant to Rule 457(p) of the Securities Act of 1933, $3,930 of the previously paid registration fee is offset against the registration fee otherwise due for this Registration Statement.

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.

SUBJECT TO COMPLETION, DATED APRIL 5, 2010

6,000,000 Shares

Codexis, Inc.

Common Stock

Prior to this offering, there has been no public market for our common stock. We anticipate that the initial public offering price will be between $13.00 and $15.00 per share. We have applied to list our common stock on The Nasdaq Global Market under the symbol CDXS.

We are selling 6,000,000 shares of our common stock through the underwriters.

The underwriters have an option to purchase a maximum of 900,000 additional shares to cover over-allotments of shares.

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

	Price to Public	Underwriting Discounts and Commissions	Proceeds to Codexis
Per Share	$	$	$
Total	$	$	$

Delivery of the shares of common stock will be made on or about , 2010.

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

Credit Suisse

Piper Jaffray

RBC Capital Markets

Pacific Crest Securities

The date of this prospectus is , 2010.

Table of Contents

Table of Contents

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.

Dealer Prospectus Delivery Obligation

Until , 2010 (25 days after commencement of this offering), all dealers that buy, sell, or trade shares of our common stock, whether or not participating in this offering, may be required to deliver a prospectus. This delivery requirement is in addition to the obligation of dealers to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

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. Unless otherwise indicated herein, Codexis, Inc., Codexis, the Company, we, us and our Codexis, Inc. and its subsidiaries.

Our Company

Our proprietary technology platform enables the creation of optimized biocatalysts that make existing industrial processes faster, cleaner and more efficient than current methods and has the potential to make new industrial processes possible at commercial scale. We have commercialized our biocatalysts in the pharmaceutical industry and are developing biocatalysts for use in producing advanced biofuels under a multi-year research and development collaboration with Shell. We are also using our technology platform to pursue biocatalyst-enabled solutions in other bioindustrial markets, including carbon management, water treatment and chemicals.

Biocatalysts are enzymes or microbes that initiate or accelerate chemical reactions. Manufacturers have historically used naturally occurring biocatalysts to produce many goods used in everyday life. However, inherent limitations in naturally occurring biocatalysts have restricted their commercial use. Our proprietary technology platform is able to overcome many of these limitations, allowing us to evolve and optimize biocatalysts to perform specific and desired chemical reactions at commercial scale.

We have focused our biocatalyst development efforts on large and rapidly growing markets, including pharmaceuticals and advanced biofuels. We have enabled biocatalyst-based drug manufacturing processes at commercial scale and have delivered biocatalysts and drug products to some of the world s leading pharmaceutical companies, including Dr. Reddy s Laboratories Ltd., Merck & Co., Inc., Pfizer Inc. and Ranbaxy Laboratories Limited. In our research and development collaboration with Shell, we are developing biocatalysts for use in producing advanced biofuels from renewable sources of non-food plant materials, known as cellulosic biomass.

The Biocatalysis Opportunity Industry Overview

Biocatalyst-enabled manufacturing processes may address a number of the drawbacks of conventional chemistry-based manufacturing. For example, unlike most chemistry-based manufacturing processes, biocatalysts can operate at or near room temperature and pressure, and often use manufacturing equipment that is less complex and expensive to build and operate. Biocatalyst-enabled processes can create products with the same or higher quality as chemistry-based manufacturing processes, while reducing the risks associated with extreme manufacturing environments and without generating the high volumes of waste, some of it hazardous to health and the environment, typically associated with conventional chemistry-based manufacturing processes.

In addition, due to concerns about the environment and the scarcity and security of supply of petroleum, there is an increasing interest in using cellulosic biomass as the feedstock for a variety of products, including advanced biofuels and other chemicals, as a replacement for petroleum. To date, conventional chemistry-based manufacturing approaches have not resulted in commercially viable processes for the conversion of cellulosic biomass to biofuels and other products. Biocatalysts have the potential to enable processes for the development of products, such as cellulose-derived biofuels, that cannot currently be manufactured using alternative techniques.

Despite their potentially significant advantages, biocatalysts have not achieved their full potential in industrial applications. Naturally occurring biocatalysts are often not stable enough to be used in industrial

Table of Contents

settings, where conditions may differ significantly from those in the biocatalysts natural environments. The activity and productivity of these biocatalysts is often too limited to be cost-effective in commercial scale manufacturing. In addition, the activity of natural biocatalysts is typically inhibited by the end product of the reactions they facilitate. This characteristic of natural biocatalysts, which is referred to as product inhibition, results in limited product yields in industrial settings. Moreover, for certain industrial applications, there are no known naturally occurring biocatalysts that catalyze the desired reaction.

Due to these limitations, other companies and researchers have tried to improve the performance of naturally occurring biocatalysts by directing their evolution through biotechnology techniques such as the random mutation of genes. However, to date, these techniques have had only limited success for a number of reasons. For example, random mutations of genes often result in decreased, not improved, performance and these alternative biotechnology techniques cannot effectively remove accumulated detrimental mutations. The end result is often an evolved biocatalyst with activity that reaches a plateau at a level that is insufficient for a commercial process. We believe there is a significant opportunity for novel technologies that can address the limitations of other biotechnology techniques and can substantially enhance the performance of biocatalysts in industrial settings.

Our Platform Technology

We believe that our proprietary technology platform can transform the industrial application of biocatalysts by improving their commercially relevant characteristics, such as stability, activity, product yield and tolerance to industrial conditions, while reducing product inhibition. In addition, our technology platform allows us to develop and optimize biocatalysts much more rapidly than is currently possible with alternative methods. Perhaps most importantly, we have demonstrated that our technology platform can enable the manufacture of products cost-effectively, at commercial scale and with significantly reduced environmental impact relative to conventional manufacturing processes.

Our proprietary technology platform uses advanced biotechnology methods, bioinformatics and years of accumulated know-how to significantly expedite the process of developing optimized biocatalysts. Key components of our technology platform include gene shuffling, whole genome shuffling, multiplexed gene SOEing, and proprietary bioinformatic software tools that allow us to identify and quantify the potential value of beneficial mutations and avoid detrimental mutations.

Our Target Markets and Solutions

Pharmaceuticals

Our technology platform enables us to deliver solutions to our customers in the pharmaceutical market by developing and delivering optimized biocatalysts that perform chemical transformations at a lower cost, and improve the efficiency and productivity of manufacturing processes. We provide value throughout the pharmaceutical product lifecycle, from preclinical development to clinical development and commercialization of products and the eventual transition from branded to generic products. Our technology platform allows us to provide benefits to our customers in a number of ways, including:

- reducing the use of raw materials and intermediate products;
- improving product yield;
- using water as a primary solvent;
- performing reactions at or near room temperature and pressure;
- eliminating the need for certain costly manufacturing equipment;

reducing energy requirements;

reducing the need for late-stage purification steps;

Table of Contents

eliminating multiple steps in the manufacturing process; and

eliminating hazardous inputs and harmful emission by-products.

Early in the product lifecycle, customers can use our services to achieve speed to market and to reduce manufacturing costs. If a pharmaceutical company that has developed a patent-protected drug, known as an innovator, incorporates our products or processes into an FDA-approved product, we expect the innovator to continue to use these products or processes for the patent life of the approved drug.

After a product is launched, customers also use our services to reduce manufacturing costs. At this stage, changes in the manufacturing process originally approved by the FDA may require additional review. Typically, pharmaceutical companies will only seek FDA approval for a manufacturing change if there are substantial cost savings associated with the change. We believe that the cost savings associated with our products may lead our customers to change their manufacturing processes for approved products and, if necessary, seek FDA approval of the new processes which incorporate our biocatalysts. Moreover, we believe these cost savings are attractive to generics manufacturers, who compete primarily on price.

Our products and services include our Codex Biocatalyst Panels, biocatalyst screening services, biocatalyst optimization services, biocatalysts and intermediates and active pharmaceutical ingredients, or APIs.

Biofuels

We believe that our technology platform will enable the development of biocatalysts that can be used to produce commercially viable, cellulose-derived biofuel alternatives to petroleum-based fuels. Since 2006, we have been engaged with Equilon Enterprises LLC dba Shell Oil Products US, which we refer to as Shell, in a research and development collaboration under which we are developing biocatalysts for use in producing advanced biofuels. Advanced biofuels are liquid transportation fuels derived from non-food biomass and which meet certain minimum carbon reduction criteria. The U.S. Congress passed the Energy Independence and Security Act of 2007, an alternative fuels mandate that calls for approximately 36 billion gallons of liquid transportation fuels sold to come from alternative sources by 2022. This mandate requires that of the 36 billion gallons, 21 billion gallons must be advanced biofuels. Our advanced biofuels program focuses on two primary elements: (1) developing biocatalysts to convert cellulosic biomass into sugars; and (2) converting these sugars into two advanced biofuels, cellulosic ethanol and biohydrocarbon diesel. For the first element, we have used our technology platform to improve our cellulase and other biocatalysts. For the second element, we have developed a biocatalyst that converts sugars to diesel fuel, and are working on improving ethanol-producing yeast. We believe that our biocatalysts will be able to convert cane sugar and sugar derived from cellulose into diesel fuel. We are using our technology platform to develop biocatalysts that we believe will:

increase the rate at which cellulosic biomass is converted into biofuels;

increase the yield of biofuels produced from cellulosic biomass;

eliminate the need to use food resources for the production of biofuels;

provide producers with more flexibility in designing processes to convert cellulosic biomass to biofuels, thereby reducing the costs associated with building and operating biofuel production facilities; and

enable the production of new types of cellulosic biofuels that could be alternatives to petroleum-based fuels.

Under our research and development collaboration with Shell, Shell will have the right, but not the obligation, to commercialize any technology that we develop in our biofuels program. If Shell commercializes our biofuels technology, we will collect a royalty for every gallon of fuel that Shell produces

Table of Contents

using our technology. If Shell chooses to commercialize any biofuels products developed through our collaboration, we believe that the combination of our technology platform with Shell s proven project development capabilities and resources could enable a biofuels solution that extends from the conversion of cellulosic biomass into biofuels to delivery and distribution of refined biofuels to consumers at the pump.

Additional Bioindustrial Opportunities

We believe that our technology platform, together with the knowledge and experience gained from our efforts in the pharmaceutical market and in our biofuels development program, will allow us to capitalize on opportunities in other bioindustrial markets, including carbon management, water treatment and chemicals. Depending on the market, we may pursue collaborations with industry leaders to allow us to leverage their competitive strengths and resources in pursuit of these opportunities.

Our Business Model

Our business model allows us to simultaneously pursue multiple commercial opportunities across a number of major markets. Our business model has resulted in a diversified revenue stream that is predictable over the near term with significant growth potential, while allowing us to share risk with and leverage the capabilities of our collaborators. Our business model includes the following key elements:

Targeting Multiple Major and Growing Markets. We currently use our technology platform to produce biocatalysts that are used at commercial scale in the pharmaceutical market. Through our collaboration with Shell, we are developing biocatalysts for use in producing commercially viable biofuels from cellulosic biomass. We also believe that we can use our technology platform to deliver biocatalyst-enabled solutions to other bioindustrial markets, including carbon management, water treatment and chemicals.

Capital-Efficient Collaborations with Industry Leaders. We have adopted a business model that leverages our collaborators engineering, manufacturing and commercial expertise, their distribution infrastructure and their ability to fund commercial scale production facilities. For instance, in the pharmaceuticals market, our supply relationship with Arch enables us to bring intermediates and/or APIs for branded pharmaceutical products to market with very limited additional capital. In addition, if we are able to develop biocatalysts that enable the commercial production of biofuels derived from cellulosic biomass and Shell decides to commercialize products based on this technology, we would need to rely on Shell, or other parties selected by Shell, to design and build the commercial scale fuel production facilities and to distribute the final fuel product.

Diversified Revenue Base. We are generating a revenue stream that is diversified across distinct industries, which should mitigate our exposure to cyclical downturns or fluctuations in any one market. In 2009, our revenues were derived from the pharmaceuticals and biofuels markets, and consisted primarily of collaborative research and development revenues and product sales. We are pursuing biocatalyst-enabled solutions in other bioindustrial markets, including carbon management, water treatment and chemicals that, if successful, will allow us to further diversify our revenues.

Visible and Predictable Revenues. Based on our existing arrangements, we believe that the revenues from both our biofuels and pharmaceutical businesses should be predictable over the near term. We receive bi-monthly payments from Shell that are based on the number of funded full-time employee equivalents, or FTEs, that work on our research collaboration with Shell. The number of funded FTEs that work on the program, and the payments from Shell for these FTEs, are specified in our collaborative research agreement, subject to Shell s ability to increase or reduce the number of FTEs under certain conditions over time. Because we allow our pharmaceutical customers to achieve significant cost savings in their manufacturing processes, historically they have continued using our biocatalysts once they have begun using our biocatalyst-enabled process.

Table of Contents

Strategy

Our objective is to be the leading provider of optimized biocatalyst-enabled solutions across a wide range of industries. Key elements of our strategy are as follows:

Become a leading biocatalyst supplier to the advanced biofuels market. Our primary development efforts are focused on producing biocatalysts that can enable Shell to become a global leader in the advanced biofuels market. We continue to build upon our milestone-driven, multi-year research and development collaboration with Shell as we advance our efforts to produce biofuels from cellulosic biomass cost-effectively at commercial scale. Because of our success to date, Shell has expanded our collaboration twice, which we believe positions us to be a key contributor to their overall biofuels strategy.

Expand into new bioindustrial markets. We are actively pursuing opportunities in other bioindustrial markets, including through self-funded research in carbon management and the pursuit of funded collaborations in carbon management, water treatment and chemicals. We have the right to use the intellectual property developed in our collaboration with Shell in fields outside of fuels and related products. We intend to leverage this and other intellectual property and our technology platform to develop products in our other target markets.

Continue growing our pharmaceutical business. We intend to pursue new collaborations in the pharmaceutical industry to integrate our products and services more deeply into drug development and manufacturing processes for clinical stage and commercially approved pharmaceutical products. As part of that effort, we will continue to aggressively market our Codex Biocatalyst Panels to pharmaceutical companies to demonstrate the capabilities of our technology platform.

Secure access to additional production capacity. To increase our biocatalyst manufacturing capacity and establish secondary supply sources, we are working to establish long-term supply contracts with contract manufacturers and are evaluating whether to invest in our own manufacturing capabilities. We may also opportunistically seek to secure specialty manufacturing assets and expand existing relationships for the supply of our biocatalysts, key pharmaceutical APIs and intermediates used in the manufacture of APIs. For example, in August 2008, we entered into an expanded supply relationship with Arch through a series of agreements for the manufacture of intermediates and APIs for specified pharmaceutical products, which agreements were terminated in February 2010 and replaced by a product supply agreement and an enzyme and product supply agreement in order to streamline and modify certain of the contractual terms governing the supply relationship.

Expand our business and technology platform through the addition of new technologies, products or businesses. In the past, we have expanded our business by acquiring companies with synergistic business plans and licensing new technology. We will continue to evaluate opportunities to acquire or license new technologies, products or businesses that complement or expand our capabilities, including in the carbon management, water treatment and chemical markets. In addition, we intend to continue to advance our technology platform by investing in our research and development capabilities to allow us to more rapidly identify and develop products and pursue new market opportunities.

Corporate Information

We were incorporated in Delaware in January 2002 as a wholly-owned subsidiary of Maxygen, Inc. We commenced independent operations in March 2002, after licensing core enabling technology from Maxygen. As of February 28, 2010, Maxygen beneficially owned approximately 21.4% of our common stock. Our other investors include industry leaders such as Shell, Chevron Corporation, Pfizer and The General Electric Company. Our principal executive offices are located at 200 Penobscot Drive, Redwood City, CA 94063, and our telephone number is (650) 421-8100. Our website address is www.codexis.com. Information

5

Table of Contents

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 logo, Codexis, Codex and Codex Biocatalyst Panel and other trademarks or service marks of Codexis, Inc. appearing in this prospectus are the property of Codexis, 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 Codexis	6,000,000 shares (or 6,900,000 shares if the underwriters exercise their over-allotment option in full).
Common stock to be outstanding after this offering	33,909,280 shares (or 34,809,280 shares if the underwriters exercise their over-allotment option in full).
Proposed Nasdaq Global Market symbol	CDXS
Use of proceeds	We expect that we will receive net proceeds of approximately $73.6 million from this offering (or $85.3 million if the underwriters exercise their over-allotment option in full) based on an assumed initial public offering price of $14.00 per share (the midpoint of the price range set forth on the cover page of this prospectus) and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering for working capital and other general corporate purposes, including the costs associated with being a public company. We may also use a portion of the net proceeds to acquire other businesses, products or technologies, and to increase our internal biocatalyst production capacity. However, we do not have agreements or commitments for any specific acquisitions at this time. Please see Use of Proceeds.
Risk factors	See Risk Factors starting on page 12 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 27,909,280 shares outstanding as of December 31, 2009 and excludes:

- 7,886,532 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2009 at a weighted average exercise price of $5.25 per share;
- 327,672 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2009 at a weighted average exercise price of $5.92 per share; and
- 1,100,000 shares of common stock reserved for issuance under our 2010 Equity Incentive Award Plan, which will become effective in connection with the consummation of this offering (plus an additional 1,553,873 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of December 31, 2009, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon the effectiveness of the 2010 Equity Incentive Award Plan).

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

- a 2-for-3 reverse stock split of our common stock and preferred stock to be effected immediately prior to the effectiveness of the registration statement of which this prospectus forms a part;

the filing of an amended and restated certificate of incorporation prior to the effectiveness of the registration statement of which this prospectus forms a part;

Table of Contents

the conversion of all of our outstanding shares of preferred stock into 25,239,658 shares of common stock in connection with the consummation of this offering and the related conversion of all outstanding preferred stock warrants into common stock warrants;

no exercise of the underwriters over-allotment option; and

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

We refer to our Series A, Series B, Series C, Series D, Series E and Series F preferred stock collectively as redeemable convertible preferred stock for financial reporting purposes and in the financial tables included in this prospectus, as more fully explained in Note 2 to our consolidated financial statements. In other parts of this prospectus, we refer to our Series A, Series B, Series C, Series D, Series E and Series F preferred stock collectively as preferred stock.

Table of Contents

Summary Consolidated 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 and the consolidated balance sheet data as of December 31, 2009 from our audited 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 summary 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 pro forma as adjusted consolidated financial data, which gives effect to the transactions described in the footnotes to the table. The unaudited pro forma and pro forma as adjusted consolidated 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.

	Years Ended December 31,		
	2007	2008	2009
	(in thousands, except per share amounts)		
Consolidated Statements of Operations Data:			
Revenues:			
Product	$ 11,418	$ 16,860	$ 18,554
Related party collaborative research and development	8,481	30,239	62,656
Collaborative research and development	4,733	3,062	1,652
Government grants	701	317	46
Total revenues	25,333	50,478	82,908
Costs and operating expenses:			
Cost of product revenues	8,319	13,188	16,678
Research and development	35,644	45,554	54,725
Selling, general and administrative	19,713	35,709	29,871
Total costs and operating expenses	63,676	94,451	101,274
Loss from operations	(38,343)	(43,973)	(18,366)
Interest income	1,491	1,538	180
Interest expense and other, net	(2,533)	(2,365)	(2,037)
Loss before provision (benefit) for income taxes	(39,385)	(44,800)	(20,223)
Provision (benefit) for income taxes	(408)	327	66
Net loss	$ (38,977)	$ (45,127)	$ (20,289)
Net loss per share of common stock, basic and diluted	$ (23.42)	$ (18.96)	$ (7.74)
Weighted average common shares used in computing net loss per share of common stock, basic and diluted	1,665	2,380	2,622
Net loss used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)			$ (19,662)

Pro forma net loss per share of common stock, basic and diluted (unaudited)(1)	$ (0.73)
Weighted average common shares used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)	26,798

Table of Contents

(1) Net loss used in computing pro forma basic and diluted net loss per share of common stock, pro forma basic and diluted net loss per share of common stock and number of weighted average common shares used in computing pro forma basic and diluted net loss per share of common stock in the table above give effect to the automatic conversion of all of our outstanding redeemable convertible preferred stock into common stock upon the closing of this offering as if such conversion had occurred at the beginning of each period or upon issuance, if later, and excludes any additional shares of common stock we may have to issue upon conversion of our Series E preferred stock and Series F preferred stock, as discussed below.

	December 31, 2009		
	Actual	Pro Forma(1)	Pro Forma As Adjusted(2)(3)
		(in thousands)	
Consolidated Balance Sheet Data:			
Cash, cash equivalents and marketable securities	$ 55,563	$ 55,563	$ 129,183
Working capital	16,397	18,406	92,026
Total assets	99,036	99,036	172,656
Redeemable convertible preferred stock warrant liability	2,009		
Current and long-term financing obligations	7,942	7,942	7,942
Redeemable convertible preferred stock	179,672		
Stockholders (deficit) equity	(144,845)	36,836	110,456

(1) The pro forma consolidated balance sheet data gives effect to (i) conversion of all of our outstanding shares of redeemable convertible preferred stock into shares of common stock (excluding any additional shares of common stock we may have to issue upon conversion of our Series E preferred stock and Series F preferred stock, as discussed below), and (ii) conversion of all of our warrants for redeemable convertible preferred stock into warrants for common stock and the related reclassification of redeemable convertible preferred stock warrant liability to stockholders equity upon the completion of this offering.

(2) The pro forma as adjusted consolidated balance sheet data gives effect to the sale of 6,000,000 shares of common stock in this offering at an assumed initial public offering price of $14.00 per share (the midpoint 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.

(3) Each $1.00 increase or decrease in the assumed initial public offering price of $14.00 per share (the midpoint 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, cash equivalents and marketable securities, working capital, total assets and stockholders equity by approximately $5.6 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.

Conversion of Our Preferred Stock

In connection with this offering, all of our outstanding preferred stock will be converted into common stock. In this prospectus, we have determined the conversion ratios of our preferred stock using 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). Due to the antidilution provisions of our certificate of incorporation that are applicable to our preferred stock, the conversion ratios of certain series of our preferred stock may be adjusted in connection with the conversion of our outstanding preferred stock into common stock in the event the initial public offering price is less than $13.71 per share, based on the estimated underwriting discounts and commissions payable by us.

Table of Contents

If the initial public offering price is equal to or greater than $13.71 per share, each share of preferred stock would be converted into one share of common stock in connection with this offering, other than shares of Series A preferred stock, which will convert at a ratio of 1:1.01. If the initial public offering price is less than $13.71 per share, the conversion ratios of our Series E preferred stock and Series F preferred stock will be increased. Therefore, depending on the initial public offering price in this offering, the holders of the Series E preferred stock and Series F preferred stock may hold a greater percentage of the common stock to be outstanding following the issuance of the shares offered by this prospectus. The precise conversion ratio of the Series E preferred stock and Series F preferred stock will be determined by multiplying the applicable Series E preferred stock and Series F preferred stock conversion price by a fraction, (i) the numerator of which is (A) the number of shares of common stock deemed outstanding immediately prior to the sale of the shares offered hereby, plus (B) the number of shares of common stock that the aggregate consideration received by us in this offering, net of underwriting discounts and commissions, would purchase at the applicable conversion price prior to adjustment, and (ii) the denominator of which is the number of shares of common stock deemed outstanding immediately prior to the sale of the shares of common stock being offered hereby plus the total number of shares of common stock sold in this offering. For purposes of this calculation, common stock deemed outstanding as of a particular date means the sum of (x) the number of shares of common stock outstanding as of such date, (y) the number of shares of common stock into which the then outstanding preferred stock could be converted if fully converted immediately before any conversion price adjustments resulting from the applicable issuance and (z) the number of shares of common stock issuable upon the exercise of all outstanding options and warrants that are vested as of the day immediately preceding such date.

The following table shows the effect of various initial public offering prices on the Series E preferred stock and Series F preferred stock conversion ratios and on our capitalization following this offering on a pro forma as adjusted basis to reflect the applicable conversion ratio adjustments and pro forma as adjusted assumptions set forth above. The initial offering prices shown below are hypothetical and illustrative.

			On a Pro Forma As Adjusted Basis as of December 31, 2009		
Initial Offering Price	**Series E and F Preferred Stock to Common Stock Conversion Ratio**	**Shares of Common Stock Issuable as a Result of Conversion Ratio Adjustment**	**Shares of Common Stock That Would Be Issued upon Conversion of All Outstanding Shares of Series E Preferred Stock**	**Shares of Common Stock That Would Be Issued upon Conversion of All Outstanding Shares of Series F Preferred Stock**	**Total Shares of Common Stock Outstanding After This Offering(1)**
$13.71 or above	1:1		4,104,512	3,686,271	33,909,280
$13.50	1:1.003147	24,511	4,117,424	3,697,870	33,933,791
$13.00	1:1.008702	67,788	4,140,223	3,718,348	33,977,068
$12.50	1:1.014319	111,550	4,163,280	3,739,053	34,020,830
$12.00	1:1.02	155,810	4,186,598	3,759,995	34,065,090
$11.50	1:1.025744	200,558	4,210,172	3,781,169	34,109,838
$11.00	1:1.032388	252,322	4,237,444	3,805,661	34,161,602
$10.50	1:1.038273	298,168	4,261,597	3,827,354	34,207,448

(1) Excludes the following:

7,886,532 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2009 at a weighted average exercise price of $5.25 per share;

327,672 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2009 at a weighted average exercise price of $5.92 per share; and

1,100,000 shares of common stock reserved for issuance under our 2010 Equity Incentive Award Plan, which will become effective in connection with the consummation of this offering (plus an additional 1,553,873 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of December 31, 2009, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon the effectiveness of the 2010 Equity Incentive Award Plan).

11

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 have a limited operating history, which may make it difficult to evaluate our current business and predict our future performance.

Our company has been in existence since early 2002. From 2002 until 2005, our operations focused on organizing and staffing our company and developing our technology platform. In 2005, we recognized our first revenues from product sales. Since 2005, we have continued to generate revenues, but because our revenue growth has occurred in recent periods, our limited operating history may make it difficult to evaluate our current business and predict our future performance. Any assessments of our current business and predictions you make about our future success or viability may not be as accurate as they could be if we had a longer operating history. We have encountered and will continue to encounter risks and difficulties frequently experienced by growing companies in rapidly changing industries. If we do not address these risks successfully, our business will be harmed.

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 include the following factors, as well as other factors described elsewhere in this prospectus:

- our ability to achieve or maintain profitability;
- actions that could cause us to lose any of our rights under our license from Maxygen;
- our relationships with and dependence on collaborators in our principal markets;
- our dependence on Shell for the development and commercialization of biofuels;
- the feasibility of producing and commercializing biofuels derived from cellulose;
- our dependence on a limited number of customers;
- our dependence on a limited number of contract manufacturers of our biocatalysts and suppliers for our pharmaceutical intermediates and APIs;
- our ability to manage our growth;

our pharmaceutical customers abilities to incorporate our biocatalysts into their manufacturing processes;

the outcomes of clinical trials conducted by our innovator customers;

our ability to develop and successfully commercialize new products for the pharmaceuticals market;

the effect of consolidation in the pharmaceutical industry on demand for our products;

our ability to commercialize our technology in other bioindustrial markets;

our ability to maintain license rights for commercial scale expression systems for cellulases;

Table of Contents

fluctuations in the price of and demand for petroleum-based fuels;

the availability of non-food renewable cellulosic biomass sources;

reductions or changes to existing fuel regulations and policies;

the existence of government subsidies or regulation with respect to carbon dioxide emissions;

our potential need for additional licenses from Maxygen to pursue certain future business opportunities in the chemical market;

our ability to obtain and maintain governmental grants;

risks associated with the international aspects of our business;

our ability to integrate any businesses we may acquire with our business;

potential issues related to our ability to accurately report our financial results in a timely manner;

our dependence on, and the need to attract and retain, key management and other personnel;

our ability to obtain, protect and enforce our intellectual property rights;

our ability to prevent the theft or misappropriation of our biocatalysts, the genes that code for our biocatalysts, know-how or technologies;

potential advantages that our competitors and potential competitors may have in securing funding or developing products;

our ability to obtain additional capital that may be necessary to expand our business;

business interruptions such as earthquakes and other natural disasters;

public concerns about the ethical, legal and social ramifications of genetically engineered products and processes;

our ability to comply with laws and regulations;

our ability to properly handle and dispose of hazardous materials used in our business;

potential product liability claims; and

our ability to use our net operating loss carryforwards to offset future taxable income.

Due to the various factors mentioned above, and others, the results of any prior quarterly or annual periods should not be relied upon as indications of our future operating performance.

We have a history of net losses, and we may not achieve or maintain profitability.

We have incurred net losses since our inception, including losses of $39.0 million, $45.1 million and $20.3 million in 2007, 2008 and 2009, respectively. As of December 31, 2009, we had an accumulated deficit of $159.6 million. We expect to incur losses and negative cash flow from operating activities for the foreseeable future. To date, we have derived a substantial portion of our revenues from research and development agreements with our collaborators and expect to derive a substantial portion of our revenues from these sources for the foreseeable future. If we are unable to extend our existing agreements or enter into new agreements upon the expiration or termination of our existing agreements, our revenues could be adversely affected. In addition, some of our collaboration agreements provide for milestone payments and future royalty payments, the payment of which are uncertain as they are dependent on our and our collaborators abilities and willingness to successfully develop and commercialize products. We expect to spend significant amounts to fund the development of additional pharmaceutical and potential bioindustrial products, including biofuels. As a result, we expect that our expenses will exceed revenues for the foreseeable future and we do not expect to achieve profitability during this period, if ever. If we fail to

Table of Contents

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.

If we fail to remediate deficiencies in our control environment or are unable to implement and maintain effective internal control over financial reporting in the future, the accuracy and timeliness of our financial reporting may be adversely affected.

In connection with the audit of our consolidated financial statements for 2005, 2006 and 2007, we and our independent registered public accounting firm identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of a company s annual or interim financial statements will not be prevented or detected on a timely basis. The material weakness comprised a lack of policies and procedures, with the associated internal controls, to appropriately address complex, non-routine transactions and a lack of a sufficient number of qualified personnel to timely account for such transactions in accordance with U.S. generally accepted accounting principles. These deficiencies in the design and operation of our internal controls resulted in the recording of numerous audit adjustments and significantly delayed our financial statement close process for the three year period ended December 31, 2007.

In connection with the audit of our consolidated financial statements for 2008, we and our independent registered public accounting firm identified a material weakness, which was related to an inadequately designed process to analyze and reconcile certain accounts and the failure of supervisors or business unit managers to review the analysis prepared for certain accounts. The material weakness affected our accruals, stock-based compensation, reimbursements under a license agreement, and inventories processes. We also identified two significant deficiencies in our internal control over financial reporting, one related to the misapplication of U.S. generally accepted accounting principles and the other related to an ineffective contract compliance process. A significant deficiency is a deficiency, or combination of deficiencies, in internal control over financial reporting that is less severe than a material weakness, yet important enough to merit attention by those responsible for oversight of a company s financial reporting.

In connection with the audit of our consolidated financial statements for 2009, we and our independent registered public accounting firm determined that the previously identified significant deficiency which related to an ineffective contract compliance process continued to exist as of December 31, 2009. Although we began to implement policies and processes to address this deficiency following the audit of our consolidated financial statements for 2008, we had not completed this implementation as of December 31, 2009.

We have not performed an evaluation of our internal control over financial reporting, such as required by Section 404 of the Sarbanes-Oxley Act, nor have we engaged our independent registered public accounting firm to perform an audit of our internal control over financial reporting as of any balance sheet date or for any period reported in our financial statements. Had we performed such an evaluation or had our independent registered public accounting firm performed an audit of our internal control over financial reporting, control deficiencies, including material weaknesses and significant deficiencies, in addition to those discussed above, may have been identified.

We have taken numerous steps to address the underlying causes of the control deficiencies described above, primarily through the development and implementation of policies, improved processes and documented procedures, the retention of third-party experts and contractors, and the hiring of additional accounting and finance personnel with technical accounting, inventory accounting and financial reporting experience. If we fail to remediate deficiencies in our control environment or are unable to implement and maintain effective internal control over financial reporting to meet the demands that will be placed upon us as a public company, including the requirements of the Sarbanes-Oxley Act, we may be unable to accurately report our financial results, or report them within the timeframes required by law or exchange regulations. In

Table of Contents

addition, while we currently use a third-party contractor to assist us in the preparation of our financial statements, we intend for our internal accounting and finance groups to handle our financial reporting obligations upon becoming a reporting company. We may encounter difficulties as we reduce our use of this contractor, which could impact our ability to timely and accurately prepare our financial statements. We cannot assure you that we will be able to remediate our existing significant deficiency in a timely manner, if at all, or that in the future additional material weaknesses or significant deficiencies will not exist or otherwise be discovered, a risk that is significantly increased in light of the complexity of our business and multinational operations. If our efforts to remediate the significant deficiency are not successful or if other deficiencies occur, our ability to accurately and timely report our financial position, results of operations or cash flows could be impaired, which could result in late filings of our annual and quarterly reports under the Securities Exchange Act of 1934, as amended, restatements of our consolidated financial statements, a decline in our stock price, suspension or delisting of our common stock by The Nasdaq Global Market, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

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

We have licensed core enabling intellectual property rights and technology from Maxygen, Inc., or Maxygen, under our March 2002 license agreement with Maxygen, which was subsequently amended in September 2002, October 2002 and August 2006. Under the terms of the license agreement, we are obligated, among other things, to pay Maxygen a significant percentage of certain types of consideration we receive in connection with our biofuels research and development collaboration with Shell. As a result of consideration received in connection with this collaboration, we were obligated to pay Maxygen $7.9 million, $0.9 million and $5.5 million for 2007, 2008 and 2009, respectively.

We rely heavily on the technology licensed to us by Maxygen and third parties under the Maxygen license. This technology includes advanced biotechnology methods, bioinformatics and years of accumulated know-how to develop the biocatalysts that are central to our business. Certain technologies sublicensed to us from Maxygen are owned by third parties, and our use of these technologies may be restricted by Maxygen s agreements with those third parties. Maxygen has the right to terminate our rights under the license with respect to fuels, but not with respect to chemicals or pharmaceuticals, if we breach our royalty obligations to Maxygen and do not cure such breach within 60 days after we receive notice of the breach. In addition, as part of the license we received from Maxygen, Maxygen assigned or sublicensed to us several license agreements between Maxygen and third parties, including an agreement with one of our competitors, Novozymes A/S, or Novozymes. These third party agreements may restrict our use of the licensed technology. If we breach one of these third party agreements and fail to cure such breach within the time period specified in such third party agreement, Maxygen has the right to terminate our license with respect to the subject matter covered by the applicable third party agreement. Maxygen also has the right to terminate our license with respect to any family of related patent applications if we fail to pay our share of costs for obtaining and maintaining a patent licensed to us by Maxygen more than three times within any three-year period. In addition, Maxygen has the first right to control prosecution, maintenance and enforcement of certain licensed intellectual property rights. If Maxygen is acquired by a third party or transfers to a third party some or all of the intellectual property rights that we have licensed, the acquirer may choose not to enforce the intellectual property rights on which our business relies, or may seek to enforce those rights ineffectively and have them invalidated, and our ability to develop and expand our business may be adversely impacted. Any termination of our license agreement with Maxygen or any of the rights licensed to us by third parties through Maxygen, or any loss of our intellectual property rights as a result of ineffective enforcement of such rights, would have a material adverse impact on our financial condition, results of operations and growth prospects and could prevent us from continuing our business.

The license agreement with Maxygen, the related sublicenses to third party technologies and the third party agreements assigned to us under the Maxygen agreement, and the interplay between those

Table of Contents

agreements, are highly complex. For example, the agreements rely on highly technical definitions and delineate permitted and restricted activities. As a result of this complexity, the agreements may be subject to differing interpretations by the counterparties that could lead to disputes or litigation, including for alleged breaches or claims that our products or activities are not covered by the scope of the licenses. If Maxygen or a third party were to make such a contention and we were unable to reach agreement on the meaning or scope of the licenses, we could be subject to litigation. Any such litigation may divert management time from focusing on business operations and could cause us to spend significant amounts of money. If such litigation were to be decided adversely to us, we could: lose our rights to utilize the subject intellectual property in our business; be forced to stop selling or using our products or processes that use the subject intellectual property; be required to obtain a license to use the subject intellectual property, which license may not be available on commercially reasonable terms, or at all; be forced to redesign those products or processes that use the subject intellectual property, which may result in significant cost or delay to us, or which could be technically infeasible; or be required to pay monetary damages.

Under our license with Maxygen, there are limitations on our ability to enforce Maxygen s patents to which we hold a license, which could have a material adverse effect on our business.

Under our agreement with Maxygen, Maxygen has the first right to enforce many of the patents that we have licensed, particularly those directly related to gene shuffling technology. If Maxygen declines to enforce these patent rights, we can enforce these rights after a delay of up to six months, or Maxygen can deny us the ability to enforce if Maxygen concludes that such enforcement may have a material adverse impact on Maxygen or one or more other licensees of Maxygen s technology. Some portions of the technology licensed to us by Maxygen are owned by third parties that retain the right to enforce the patents. If Maxygen or these third parties fail to enforce their patent rights, our business could be materially adversely affected. Maxygen also has the right to control the defense of patent infringement claims made by third parties alleging infringement related to gene shuffling technology. If Maxygen does not provide a timely and adequate defense to these claims, we could be forced to stop using the licensed technology, redesign our products and/or obtain a license from the party claiming infringement, which may not be available on commercially reasonable terms or at all. If Maxygen were to become acquired or controlled by a competitor of ours or a third party who is not willing to work with us on the same terms or commit the same resources as Maxygen, our business could be harmed.

We are dependent on our collaborators, and our failure to successfully manage these relationships could prevent us from developing and commercializing many of our products and achieving or sustaining profitability.

Our ability to maintain and manage collaborations in our markets is fundamental to the success of our business. We currently have license agreements, research and development agreements, supply agreements and/or distribution agreements with various collaborators. We may have limited or no control over the amount or timing of resources that any collaborator is able or willing to devote to our partnered products or collaborative efforts. Any of our collaborators may fail to perform their obligations as expected. These collaborators may breach or terminate their agreements with us or otherwise fail to conduct their collaborative activities successfully and in a timely manner. Further, our collaborators may not develop products arising out of our collaborative arrangements or devote sufficient resources to the development, manufacture, marketing, or sale of these products. Moreover, disagreements with a collaborator could develop and any conflict with a collaborator could reduce our ability to enter into future collaboration agreements and negatively impact our relationships with one or more existing collaborators. If any of these events occur, or if we fail to maintain our agreements with our collaborators, we may not be able to commercialize our existing and potential products, grow our business, or generate sufficient revenues to support our operations. Our collaboration opportunities could be harmed if:

- we do not achieve our research and development objectives under our collaboration agreements in a timely manner or at all;

Table of Contents

- we develop products and processes or enter into additional collaborations that conflict with the business objectives of our other collaborators;
- we disagree with our collaborators as to rights to intellectual property we develop, or their research programs or commercialization activities;
- we are unable to manage multiple simultaneous collaborations;
- our collaborators become competitors of ours or enter into agreements with our competitors;
- our collaborators become unable or less willing to expend their resources on research and development or commercialization efforts due to general market conditions, their financial condition or other circumstances beyond our control; or
- consolidation in our target markets limits the number of potential collaborators.

Additionally, our business could be negatively impacted if any of our collaborators or suppliers undergoes a change of control or were to otherwise assign the rights or obligations under any of our agreements. For example, under our license agreement with Shell, Shell may assign the agreement without our consent to its controlled affiliates or in connection with a change of control. If Shell or any of our other collaborators were to assign these agreements to a competitor of ours or to a third party who is not willing to work with us on the same terms or commit the same resources as the current collaborator, our business and prospects could be harmed.

Our future success is heavily dependent on our collaborative research agreement with Shell.

Our current business plan for biofuels is heavily dependent on our collaborative research agreement with Shell, which will continue to be critical to researching and developing successful biocatalysts for producing biofuel products. Shell s efforts in commercializing those products profitably will be critical to the success of our business plan for biofuels. If we are unable to successfully execute on the development of products for Shell, our ability to expand into other bioindustrial areas may be significantly impaired, which will materially and adversely affect our ability to grow our business.

We cannot control the financial resources Shell devotes to our programs under the collaborative research agreement. Currently, we receive bi-monthly payments from Shell that are based on the number of full-time employee equivalents, or FTEs, that work on our research collaboration with Shell. The number of FTEs that work on the program, and the payments from Shell for these FTEs, are specified in our collaborative research agreement. Until November 1, 2010, Shell has the right to reduce the number of funded FTEs under the collaborative research agreement by up to 12 FTEs following 60 days advance written notice. After November 1, 2010, Shell has the right to further reduce the number of funded FTEs, with any one reduction not to exceed 98 funded FTEs, following advance written notice. The required notice period ranges from 30 to 270 days, so the earliest an FTE reduction could take place would be December 2, 2010. Following any such reduction, Shell is subject to a standstill period of between 90 and 360 days during which period Shell cannot provide notice of any further FTE reductions. The notice and standstill periods are dependent on the number of funded FTEs reduced, with the length of notice and standstill periods increasing commensurate with the number of FTEs reduced. Any such reduction would have a material adverse impact on our revenues and business plan for biofuels. Moreover, disputes may arise between us and Shell, which could delay the programs on which we are working or could prevent the commercialization of products developed under our research and development collaboration. If that were to occur, we may have to use funds, personnel, equipment, facilities and other resources that we have not budgeted to undertake certain activities on our own. Disagreements with Shell could also result in expensive arbitration or litigation, which may not be resolved in our favor. Performance issues, program delay or termination or unbudgeted use of our resources may have a material adverse effect on our business and financial condition. Even if we successfully develop commercially viable technologies, our ability to

Table of Contents

derive revenues from those technologies will be dependent upon Shell s willingness and ability to commercialize them. Shell has the right, but not the obligation, to commercialize these technologies. If Shell decides to commercialize our technology, we would need to rely on Shell, or other parties selected by Shell, to design, finance and construct commercial scale biofuel facilities, and operate commercial scale facilities at costs that are competitive with traditional petroleum-based fuels and other alternative fuel technologies that may be developed. Shell could merge with or be acquired by another company or experience financial or other setbacks unrelated to our research collaboration agreement that could adversely affect us.

We have agreed to work exclusively with Shell until November 2012 in the field of converting cellulosic biomass into fermentable sugars that are used in the production of fuels and related products as well as the conversion of these sugars into fuels and related products. However, Shell is not required to work exclusively with us, and could develop or pursue alternative technologies that it decides to use for commercialization purposes instead of the technology developed under our collaborative research agreement with Shell. For example, Shell is currently working with Virent Energy Systems to develop a thermo-chemical approach to developing biogasoline. Even if Shell decides to commercialize products based on our technologies, Shell has no obligation to purchase its biocatalyst supply from us. If Shell does not pursue the commercialization of any cellulosic sugars, biofuels or related products that may be developed under our collaborative research agreement, our exclusive arrangement would prevent us from licensing any technology developed under the collaboration for the patent life of such technology, which could place us at a significant competitive disadvantage in the biofuels market.

We cannot guarantee that our relationship with Shell will continue. After November 1, 2010, Shell can terminate its collaborative research agreement with us for any or no reason by providing us with nine months notice. Each party also has the right to terminate the license agreement and the collaborative research agreement in the case of an uncured breach by the other party, and to terminate the collaborative research agreement if that party believes the other party has assigned the collaborative research agreement to a direct competitor of the terminating party. If our collaboration with Shell were to fail, we would likely need to find another collaborator to provide the financial assistance and infrastructure necessary for us to develop and commercialize our products and execute our strategy with respect to biofuels. Failure to maintain this relationship would have a material adverse effect on our business, financial condition and prospects.

The success of our cellulosic ethanol program may be dependent on the performance of other parties.

In connection with our research and development collaboration with Shell, we entered into a multi-party collaborative research and license agreement with Iogen Energy Corporation, or Iogen, and Shell in July 2009, which is focused on developing technology to convert cellulosic biomass to ethanol for commercial scale production. Either Shell or Iogen may fail to perform their obligations under this collaboration, may breach or terminate the collaboration agreement or otherwise fail to conduct their collaborative activities successfully and in a timely manner. Further, they may not devote sufficient resources to the development of technology to convert cellulosic biomass to ethanol or may fail to develop the technology altogether. Moreover, disagreements or conflicts amongst the parties could develop and could negatively impact our development efforts or our relationships with Shell and Iogen. If any of these events occur, or if we fail to maintain this collaboration with Shell and Iogen, we may be unable to develop technology for use in the production of cellulosic ethanol at commercial scale, which would have an adverse impact on our ability to grow our business. In addition, the collaborative research and license agreement with Iogen and Shell terminates in the event (i) our separate license agreements with Shell terminate or (ii) Iogen s separate technology license agreement with Shell terminates. In addition, Shell can terminate the collaborative research and license agreement for any or no reason by providing us and Iogen with 30 days notice. Any unilateral action by Shell to terminate either its separate license agreements with us or Iogen will prevent any further research and development activities under the multi-party

Table of Contents

collaboration. As a result, our ability to pursue research and development activities relating to the conversion of cellulosic biomass and our biofuels programs may be adversely impacted.

We do not yet know what impact, if any, the proposed joint venture recently announced by Shell and Cosan will have on our business.

In February 2010, Shell International Petroleum Company Limited, or Shell International, an affiliate of Shell, announced that it had signed a non-binding memorandum of understanding with Cosan S.A. with the intention of forming a joint venture in Brazil for the production of ethanol, sugar and power, and the supply, distribution and retail of transportation fuels. According to the announcement, Shell International would contribute to the joint venture, among other assets, Shell s equity interest in us. The consummation of the joint venture is subject to the negotiation and execution of final transaction documentation, the satisfactory completion of due diligence and the receipt of regulatory approvals, among other conditions. As a result, there can be no certainty when or if the joint venture will be consummated. If the joint venture is formed, we do not know whether we will receive any benefits from it. Moreover, the joint venture may impact Shell s willingness to continue to fund our collaborative research program and to commercialize any advanced biofuels that may be produced utilizing our technology, and on the timing of any such commercialization. Any of these events, or other decisions made by Shell with respect to the proposed joint venture, could have a material adverse effect on our business.

Production and commercialization of biofuels derived from cellulose may not be feasible.

We are developing biocatalysts for use in producing two advanced biofuels, cellulosic ethanol and biohydrocarbon diesel, as part of our research and development collaboration with Shell. However, production and commercialization of cellulosic biofuels may not be feasible for a variety of reasons. For example, the development of technology for converting sugar derived from non-food renewable biomass sources into a commercially viable biofuel is still in its early stages, and we do not know whether this can be done commercially or at all. To date, there has been limited private and government funding for research and development in advanced biofuels relative to the scope of the challenges presented by this development effort. Furthermore, there have been only a few well-directed public policies emphasizing investment in the research and development of, and providing incentives for the commercialization of and transition to, biofuels.

As of the date of this prospectus, we believe that there are no commercial scale cellulosic biofuel production plants in operation. There can be no assurance that anyone will be able or willing to develop and operate biofuel production plants at commercial scale or that any biofuel facilities can be profitable.

Additionally, different biocatalysts may need to be developed for use in different geographic locations to convert the cellulosic biomass available in each locale into sugars that can be used in the production of these biofuels. This will make the development of biofuels derived from cellulose more challenging and expensive.

Moreover, substantial development of infrastructure will be required for the ethanol market to grow. Areas requiring expansion include, but are not limited to, additional rail capacity, additional storage facilities for ethanol, increases in truck fleets capable of transporting ethanol within localized markets, expansion of refining and blending facilities to handle ethanol, and growth in the fleet of end user vehicles capable of using ethanol blends. Substantial investments required for infrastructure changes and expansions may not be made on a timely basis or at all. Any delay or failure in making the changes to or expansion of infrastructure could harm demand or prices for ethanol and impose additional costs that would hinder its commercialization.

Finally, if existing tax credits, subsidies and other incentives in the United States and foreign markets are phased out or reduced, the overall cost of commercialization of cellulosic biofuels will increase.

Table of Contents

We are dependent on a limited number of customers.

Our current revenues are derived from a limited number of key customers. For the year ended December 31, 2008, our top five customers accounted for 79% of our total revenues, with Shell alone accounting for 60% of our total revenues. For the year ended December 31, 2009, our top five customers accounted for 90% of our total revenues, with Shell accounting for 76% of our total revenues. We expect a limited number of customers to continue to account for a significant portion of our revenues for the foreseeable future. This customer concentration increases the risk of quarterly fluctuations in our revenues and operating results. The loss or reduction of business from one or a combination of our significant customers could materially adversely affect our revenues, financial condition and results of operations.

Our dependence on contract manufacturers for biocatalyst production exposes our business to risks.

We have limited internal capacity to manufacture biocatalysts and are unable to do so for commercial scale production. As a result, we are dependent upon the performance and capacity of third party manufacturers for the commercial scale manufacturing of our biocatalysts.

We rely on two primary contract manufacturers, CPC Biotech srl, or CPC, and Lactosan GmbH & Co. KG, or Lactosan, to manufacture substantially all of the biocatalysts used in our pharmaceutical business. Our pharmaceutical business, therefore, faces risks of difficulties with, and interruptions in, performance by these contract manufacturers, the occurrence of which could adversely impact the availability, launch and/or sales of our enzymes in the future. We have qualified other contract manufacturers to manufacture biocatalysts for our pharmaceutical business, but we do not have agreements or commitments with such contract manufacturers at this time. The failure of any manufacturers that we may use to supply manufactured product on a timely basis or at all, or to manufacture our biocatalysts in compliance with our specifications or applicable quality requirements or in volumes sufficient to meet demand would adversely affect our ability to sell pharmaceutical products, could harm our relationships with our collaborators or customers and could negatively affect our revenues and operating results. For example, in 2008, we were required to secure an alternative source of certain biocatalysts when viruses infected one of our contract manufacturer s facilities. If this or any similar event disrupts the operations of any of our suppliers in the future, we may be forced to secure alternative sources of supply, which may be unavailable on commercially acceptable terms, cause delays in our ability to deliver products to our customers, increase our costs and decrease our profit margins.

We do not currently have a long-term supply contract with CPC, Lactosan or any other contract manufacturers, which are under no obligation to manufacture our biocatalysts and could elect to discontinue their manufacture at any time. If we require additional manufacturing capacity and are unable to obtain it in sufficient quantity, we may not be able to increase our pharmaceutical sales, or we may be required to make substantial capital investments to build that capacity or to contract with other manufacturers on terms that may be less favorable than the terms we currently have with CPC or Lactosan. If we choose to build our own additional manufacturing capacity, it could take a year or longer before our facility is able to produce commercial volumes of our biocatalysts. In addition, if we contract with other manufacturers, we may experience delays of several months in qualifying them, which could harm our relationships with our collaborators or customers and could negatively affect our revenues or operating results.

We are working to establish long-term supply contracts with contract manufacturers and are evaluating whether to invest in our own manufacturing capabilities. However, we cannot guarantee that we will be able to enter into long-term supply contracts on commercially reasonable terms, or at all, or to acquire, develop or contract for internal manufacturing capabilities. Any resources we expend on acquiring or building internal manufacturing capabilities could be at the expense of other potentially more profitable opportunities.

Table of Contents

We are primarily dependent on contract manufacturers to manufacture our pharmaceutical products.

We currently rely on a small number of contract manufacturers to manufacture all of our pharmaceutical APIs and intermediates used in the manufacture of APIs. In particular, in August 2008, we entered into a series of agreements that significantly broadened our relationship with Arch, which serves as our exclusive supplier for certain intermediates and APIs, including intermediates used to manufacture atorvastatin. These agreements were terminated in February 2010 and replaced by a product supply agreement and an enzyme and product supply agreement in order to streamline and modify certain of the contractual terms governing the supply relationship.

Our pharmaceutical business may face risks of difficulties with, and interruptions in, performance by Arch, or any other contract manufacturer that we rely on to manufacture our intermediates and APIs, the occurrence of which could adversely impact the availability, launch and/or sales of our products in the future. Under our arrangement with Arch, Arch is obligated to exclusively supply to Codexis and Codexis is obligated to exclusively purchase from Arch five distinct products, subject to certain specified exceptions. Because we rely on Arch to supply us exclusively with certain intermediates and APIs, the failure of Arch to supply our products on a timely basis or at all, or to manufacture our products in compliance with our specifications or applicable quality requirements, which may include current Good Manufacturing Practices, or cGMP, or to manufacture these products in volumes sufficient to meet demand would adversely affect our ability to commercialize these products and could lead to lost sales and lost customer confidence and would negatively affect our revenues and operating results. If for any reason Arch is unable to meet our volume requirements, or if either we or Arch terminates our relationship prematurely pursuant to the terms of our agreements, we will need to contract with other suppliers. We may experience delays in contracting with other suppliers, or we may not be able to contract with other suppliers on commercially reasonable terms or at all. We will not have enough capacity to meet our current demand projections if we are faced with any such delay or inability to contract with other suppliers, which could adversely affect our ability to commercialize these products and could harm our relationships with our customers.

We also rely on other contract manufacturers to supply other pharmaceutical intermediates, APIs and other products. The failure of any of these contract manufacturers to supply intermediates or APIs, or to manufacture products in compliance with our specifications or in sufficient volumes, would have negative effects on our revenues and operating results.

In February 2010, we entered into an agreement with Dishman Pharmaceuticals and Chemicals, Ltd., or Dishman, a global manufacturer of intermediates and APIs located in India, whereby we will work exclusively with Dishman and Dishman will work exclusively with us with respect to the manufacture and supply of intermediates and APIs using our biocatalysts for a select group of innovator pharmaceutical companies. Dishman will have a one-time right to expand such exclusivity to include all other innovator pharmaceutical companies if revenues under the collaboration agreement reach certain targeted levels. In the event we do not achieve subsequent revenue targets after Dishman has exercised such expansion right, we may choose to convert Dishman s exclusive right back to a non-exclusive right for such other innovators. To the extent we are obligated to exclusively engage Dishman with respect to the manufacture and supply of APIs and intermediates we may be unable to secure certain innovator pharmaceutical companies as our customers if they have a previous relationship with another contract manufacturer or otherwise prefer a contract manufacturer other than Dishman to manufacture and supply APIs or other intermediates for their products.

We rely on Arch to market our products in certain regions, and Arch may not be able to effectively market our products.

Using our biocatalysts, Arch manufactures certain specified APIs, and intermediates used in the manufacture of APIs, that we then purchase and have the right to sell to innovator pharmaceutical

Table of Contents

companies worldwide, generic pharmaceutical companies in the United States, Canada, Europe and Israel, and certain pharmaceutical companies in India. Arch has the exclusive right to manufacture, market and sell such APIs and intermediaries to generic pharmaceutical companies in countries other than the United States, Canada, Europe and Israel, and certain other pharmaceutical companies in India. We must therefore rely on Arch for their financial resources and their marketing expertise for the commercialization of such APIs and intermediates in these regions. We cannot control Arch s level of activity or expenditures relating to the marketing of such products relative to the rest of their products or marketing efforts. Arch may fail to effectively market our products in these regions. Conflicting priorities, competing demands or other factors that we cannot control, and of which we may not be aware, may cause Arch to deemphasize such products. If we are unable to effectively leverage Arch s marketing capabilities or Arch does not successfully promote such products in the designated territories as our sole marketing partner, this could harm our business, our revenues and operating results, and our ability to bring such products to the marketplace could be harmed.

We may continue to encounter difficulties managing our growth, which could adversely affect our business.

Our business has grown rapidly and we expect this growth to continue. Overall, we have grown from approximately 40 employees at the end of 2002 to approximately 290 employees as of December 31, 2009. Currently, we are working simultaneously on multiple projects targeting several markets. Furthermore, we are conducting our business across several countries, including activities in the United States, India, Japan, Singapore, Austria, France, Germany, Hungary and Italy. These diversified, global operations place increased demands on our limited resources and require us to substantially expand the capabilities of our administrative and operational resources and to attract, train, manage and retain qualified management, technicians, scientists and other personnel. As our operations expand domestically and internationally, we will need to continue to manage multiple locations and additional relationships with various customers, collaborators, suppliers and other third parties. Our ability to manage our operations, growth, and various projects effectively will require us to make additional investments in our infrastructure to continue to improve our operational, financial and management controls and our reporting systems and procedures and to attract and retain sufficient numbers of talented employees, which we may be unable to do effectively. As a result, we may be unable to manage our expenses in the future, which may negatively impact our gross margins or operating margins in any particular quarter. In addition, we may not be able to successfully improve our management information and control systems, including our internal control over financial reporting, to a level necessary to manage our growth and to remediate the existing significant deficiency in our internal control over financial reporting that was identified in our last audit, and we may discover additional deficiencies in existing systems and controls that we may not be able to remediate in an efficient or timely manner.

Our business could be adversely affected if pharmaceutical customers do not incorporate our biocatalysts into their manufacturing processes.

Historically, pharmaceutical companies have been reluctant to use biocatalysts in the manufacture of their intermediates or APIs because naturally occurring biocatalysts were not economically viable for production at commercial scale. For example, naturally occurring biocatalysts are often not stable enough to be used in industrial settings. Additionally, the activity and productivity of these biocatalysts are often too limited to be effective in commercial scale manufacturing and often result in incomplete reactions and insufficient product yields. Although our biocatalysts have been developed to address shortcomings of naturally occurring biocatalysts, we may still encounter reluctance by pharmaceutical companies to adopt processes that use our biocatalysts. If customers decide not to adopt processes using our biocatalysts over other methods of producing the intermediates or APIs for their drugs, our revenues and prospects will be negatively impacted.

Table of Contents

Moreover, we believe that the lower manufacturing costs enabled by our technology platform is one of the principal reasons pharmaceutical companies have purchased and will continue to purchase our biocatalysts and optimization services. If we are unable to maintain the cost advantages provided by our technology platform, customers may be less willing to purchase our products and services, which would also negatively impact our revenues. In addition, we may be unable to reach agreement on pricing or other terms with potential customers, which may adversely impact our ability to grow our business.

Our business could be adversely affected if the clinical trials being conducted by our innovator customers fail or if the processes used by those customers to manufacture their final pharmaceutical products fail to be approved.

Our biocatalysts are used in the manufacture of intermediates and APIs which are then used in the manufacture of final pharmaceutical products by our existing and potential customers who sell branded drugs, which we refer to as innovators. These pharmaceutical products must be approved by the FDA in the United States and similar regulatory bodies in other markets prior to commercialization. If these customers experience adverse events in their clinical trials, fail to receive regulatory approval for the drugs, or decide for business or other reasons to discontinue their clinical trials or drug development activities, our revenues and prospects will be negatively impacted. For example, one of our customers that incorporated our biocatalysts in the manufacturing process for a drug candidate suspended its development efforts during clinical trials. As a result, we were unable to realize a potential long-term revenue stream that would otherwise be associated with a commercialized product. The process of producing these drugs, and their generic equivalents, is also subject to regulation by the FDA in the United States and equivalent regulatory bodies in other markets. If any pharmaceutical process that uses our biocatalysts does not receive approval by the appropriate regulatory body or if customers decide not to pursue approval, our business could be adversely affected.

If we are unable to develop and commercialize new products for the pharmaceutical market, our business and prospects will be harmed.

We have launched several new intermediates and APIs for generic drugs, including Singulair and Cymbalta, in markets in which they are not patent protected, and plan to launch these same products in various other markets once the patent protection for each product in those other markets expires. In addition, we plan to launch other new intermediates and APIs in the future. These efforts are subject to numerous risks, including the following:

- we may be unable to successfully develop the biocatalysts or manufacturing processes for our intermediates and APIs in a timely and cost-effective manner, if at all;
- we may face difficulties in transferring the developed technologies to Arch, or other contract manufacturers that we may use, for commercial scale production;
- Arch, or other contract manufacturers that we may use, may be unable to scale their manufacturing operations to meet the demand for these products and we may be unable to secure additional manufacturing capacity;
- generics manufacturers may not be willing to purchase these products from us on favorable terms, if at all;
- we may face product liability litigation, unexpected safety or efficacy concerns and product recalls or withdrawals;
- changes in laws or regulations relating to the pharmaceutical industry could cause us to incur increased costs of compliance or otherwise harm our business;
- negative publicity may affect doctor or patient confidence in the products;

23

Table of Contents

we may face pressure from existing or new competitive products; and

we may face pricing pressures from existing or new competitors, some of which may benefit from government subsidies or other incentives in their local markets.

In addition, our innovator customers may view us as competitors and be less willing to do business with us. Moreover, we may be subject to claims alleging that our pharmaceutical products violate the patent or other intellectual property rights of third parties, particularly in connection with any generic products on which the patent covering the branded drug is expiring. These claims could give rise to litigation, which may be costly and time-consuming and could divert management s attention. If we are unsuccessful in our defense of any such claims, we may lose our right to develop or manufacture the products, be required to pay monetary damages, or be required to enter into license agreements and pay substantial royalties. If one or more of these risks were to materialize, our future business, results of operations and financial condition could be materially adversely affected, and we may be unable to grow our business.

Consolidation in the pharmaceutical industry could adversely impact our business.

There has been significant consolidation in the pharmaceutical industry, including the recent mergers of Pfizer Inc. and Wyeth, Merck and Schering-Plough Corporation and F. Hoffman-La Roche Ltd. and Genentech Inc., and the acquisition of several generics businesses by Novartis AG, and this consolidation may continue in the future. When pharmaceutical companies merge, they often rationalize their product portfolios by eliminating competing product programs, resulting in fewer drug programs for certain target indications. As a result of this consolidation, there are fewer potential pharmaceutical customers and fewer drug development programs that could utilize our products and services to enhance drug manufacturing processes. For example, the consolidation of two pharmaceutical companies may lead the acquiring company to suspend or terminate development programs for certain product candidates for which we may have been providing or had the opportunity to provide biocatalysts, intermediates or APIs. This would lead to diminished demand for our products and services, which could adversely impact our business.

If we are unable to successfully commercialize our technology in other bioindustrial markets, we may be unable to grow our business.

In addition to biofuels, we expect to invest a significant amount of our future research and development efforts in other bioindustrial markets, including carbon management, water treatment and chemicals. Because we do not currently and may never possess the resources necessary to independently develop and commercialize all of the potential products that may result from our technologies, our ability to succeed in these target markets will likely depend on our ability to enter into collaboration agreements to develop and commercialize potential products. We intend to pursue such additional collaborations, but may be unable to do so on terms satisfactory to us, or at all. Even if we are able to enter into collaborations in one or more of these areas, the collaborations may be unsuccessful. Moreover, because we have limited financial and managerial resources, we will be required to prioritize our application of resources to particular development and commercialization efforts. Any resources we expend on one or more of these efforts could be at the expense of other potentially profitable opportunities. If we focus our efforts and resources on one or more of these areas and they do not lead to commercially viable products, our revenues, financial condition and results of operations could be adversely affected.

If we are unable to maintain license rights to a commercial scale expression system for enzymes that convert cellulosic biomass to sugars, our business may be materially adversely affected.

We entered into a license agreement with Dyadic International, Inc. and its affiliate, or Dyadic, in November 2008 to obtain access to an expression system that is capable of producing the necessary biocatalysts for the commercialization of cellulosic biofuels. Under the license agreement with Dyadic, we

Table of Contents

obtained a non-exclusive license under intellectual property rights of Dyadic relating to Dyadic s proprietary fungal expression technology for the production of enzymes. We also obtained access to specified materials of Dyadic relating to such Dyadic technology. Our license is sublicenseable to Shell in the field of biofuels. Dyadic has the right to terminate our licenses under the license agreement if we challenge the validity of any of the patents licensed under the license agreement and for various other reasons. Our licenses, and access to such materials of Dyadic, under the license agreement will terminate as a result of any termination of the license agreement other than due to Dyadic s material breach. If we are unable to maintain these rights on commercially reasonable terms or if the license agreement is terminated for any reason, we will need to buy or license this type of expression system from another party or develop this type of expression system ourselves, which may be difficult, costly and time consuming, in part because of the broad, existing intellectual property rights owned by Danisco A/S, Novozymes and others. If any of these events occur, our business may be materially adversely affected.

Fluctuations in the price of and demand for petroleum-based fuels may reduce demand for biofuels.

Biofuels are anticipated to be marketed 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.

The royalties that we may earn under our agreements with Shell are indexed to the price of oil and generally increase as the price of oil increases. However, the index is set based on average prices between November 2007 and the date of first commercial sale. Therefore, if prices fall, our revenues would be negatively impacted.

Our approach to the advanced biofuels markets may be limited by the availability or cost of non-food renewable cellulosic biomass sources.

Our approach to the advanced biofuels markets will be dependent on the availability and price of the cellulosic biomass that will be used to produce biofuels derived from cellulose. If the availability of cellulosic biomass decreases or its price increases, this may reduce the royalties that we collect from Shell and 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.

The price and availability of cellulosic biomass may be influenced by general economic, market and regulatory factors. These factors include the availability of arable land to supply feedstock, 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 cellulosic biomass is difficult to predict, especially without knowing what types of cellulosic biomass materials we may need to use.

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

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 U.S. Congress passed an alternative fuels mandate that currently calls for approximately 13 billion gallons of liquid transportation fuels sold in 2010 to come from alternative sources, including biofuels, a mandate that grows to 36 billion gallons by 2022. Of this amount, a minimum of 21 billion gallons must be advanced biofuels. In the United States 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

Table of Contents

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 operating results. Our other potential bioindustrial products may be subject to additional regulations.

If governmental incentives or other actions targeted at limiting carbon emissions are not adopted, a broad market for carbon management solutions may not develop.

Our strategy with respect to carbon management, although still in the research phase, would likely require an expansion of the market for the management of carbon dioxide emissions prior to us being able to recognize significant revenues from our research and continuing expenditures of resources. The development of a significant market will likely depend on the adoption of government subsidies or other government regulation requiring companies to limit their carbon emissions. In the absence of such additional government subsidies or regulation, this market may not expand and we would not be able to generate significant revenues from our carbon management operations.

We may need additional licenses from Maxygen to pursue certain future business opportunities in the chemicals market.

Under our license agreement with Maxygen, we obtained exclusive rights to manufacture certain types of chemicals for specified purposes within particular fields. Should we desire to work on any chemicals that are outside the scope of these license rights, we may need to seek additional rights from Maxygen. Maxygen has no obligation to grant such rights to us and may choose not to license such rights to us on favorable terms, if at all. If we are unable to obtain rights to those additional areas, we may not be able to develop products or services or pursue collaborations in those areas, which could limit our ability to expand into the chemicals market.

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

We have received various government grants to complement and enhance our own resources. We may seek to obtain government grants and subsidies in the future to offset all or a portion of the costs of building additional 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 face risks associated with our international business.

Significant portions of our operations are conducted outside of the United States and we expect to continue to have significant foreign operations in the foreseeable future. International business operations are subject to a variety of risks, including:

- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products or repatriate profits to the United States;

Table of Contents

the imposition of tariffs;

the imposition of limitations on, or increase of, withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;

the imposition of limitations on genetically-engineered products or processes and the production or sale of those products or processes in foreign countries;

currency exchange rate fluctuations;

uncertainties relating to foreign laws and legal proceedings including tax and exchange control laws;

the availability of government subsidies or other incentives that benefit competitors in their local markets that are not available to us;

economic or political instability in foreign countries;

difficulties in staffing and managing foreign operations; and

the need to comply with a variety of U.S. laws applicable to the conduct of overseas operations, including export control laws and the Foreign Corrupt Practices Act.

We manufacture many of our pharmaceutical intermediates in India, which has stringent local regulations that make it difficult for money earned in India to be taken out of the country without being subject to Indian taxes. While our Indian subsidiary can make use of some of the funds we earn in India, these regulations may limit the amount of profits we can repatriate from operations in India.

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.

We have made acquisitions in the past, and if appropriate opportunities become available, we expect to acquire additional businesses, assets, technologies, or products to enhance our business in the future. In connection with any future acquisitions, we could:

issue additional equity securities which would dilute our current stockholders;

incur substantial debt to fund the acquisitions; or

assume significant liabilities.

Acquisitions involve numerous risks, including problems integrating the purchased operations, technologies or products, unanticipated costs and other liabilities, diversion of management s attention from our core businesses, adverse effects on existing business relationships with current and/or prospective collaborators, customers and/or suppliers, risks associated with entering markets in which we have no or limited prior experience and potential loss of key employees. We do not have extensive experience in managing the integration process and we may not be able to successfully integrate any businesses, assets, products, technologies, or personnel that we might acquire in the future without a significant expenditure of operating, financial and management resources, if at all. The integration process could divert management time from focusing on

operating our business, result in a decline in employee morale and cause retention issues to arise from changes in compensation, reporting relationships, future prospects or the direction of the business. Acquisitions may also require us to record goodwill and non-amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write offs and restructuring and other related expenses, all of which could harm our operating results and financial condition. In addition, we may acquire companies that have insufficient internal financial controls, which could impair our ability to integrate the acquired company and adversely impact our financial reporting. If we fail in our integration efforts with respect to any of our acquisitions and are unable to efficiently operate as a combined organization, our business and financial condition may be adversely affected.

Table of Contents

We must rely on our suppliers, contract manufacturers and customers to deliver timely and accurate information in order to accurately report our financial results in the time frame and manner required by law.

We need to receive timely, accurate and complete information from a number of third parties in order to accurately report our financial results on a timely basis. We rely on third parties that sell our pharmaceutical products that are manufactured using our biocatalysts to provide us with complete and accurate information regarding revenues, costs of revenues and payments owed to us on a timely basis. In addition, we rely on suppliers and certain contract manufacturers, including Arch, to provide us with timely and accurate information regarding our inventories and manufacturing cost information, and we rely on current and former collaborators to provide us with product sales and cost saving information in connection with royalties owed to us. Any failure to receive timely information from one or more of these third parties could require that we estimate a greater portion of our revenues and other operating performance metrics for the period, which could cause our reported financial results to be incorrect. Moreover, if the information that we receive is not accurate, our financial statements may be materially incorrect and may require restatement, and we may not receive the full amount of revenues that we are entitled to under these arrangements. Although we typically have audit rights with these parties, performing such an audit could be harmful to our collaborative relationships, expensive and time consuming and may not be sufficient to reveal any discrepancies in a timeframe consistent with our reporting requirements.

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, harm our research and development efforts, and we may be unable to pursue collaborations or develop our own products.

Our business involves complex, global operations across a variety of markets and requires a management team and employee workforce that is knowledgeable in the many areas in which we operate. The loss of any key members of our management, including our Chief Executive Officer, Alan Shaw, 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 collaborations or licensing arrangements to execute on 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 collaborations or licensing arrangements to execute on 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 biofuels area, or due to the unavailability of personnel with the qualifications or experience necessary for our 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 collaborators 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 attract and retain such personnel on acceptable terms. 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. Additionally, we would be in breach of our collaborative research agreement with Shell if we fail to maintain a specified number of personnel.

Table of Contents

Our ability to compete may decline 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 depends in part on our ability to obtain patents and maintain adequate protection of our intellectual property for our technologies and products and potential products in the United States and other countries. We have adopted a strategy of seeking patent protection in the United States and in foreign countries with respect to certain of the technologies used in or relating to our products and processes. As such, as of December 31, 2009, we owned or had licensed rights to approximately 235 issued patents and approximately 280 pending patent applications in the United States and in various foreign jurisdictions. Of the licensed patents and patent applications, most are owned by Maxygen and exclusively licensed to us for use with respect to certain products for specified purposes within certain fields. However, some of these patents will expire as early as 2014. As of December 31, 2009, we owned approximately 35 issued patents and approximately 115 pending patent applications in the United States and in various foreign jurisdictions. These patents and patent applications are directed to our enabling technologies and to our methods and products which support our business in the pharmaceuticals and bioindustrials markets. We intend to continue to apply for patents relating to our technologies, methods and products as we deem appropriate.

Numerous patents in our portfolio involve complex legal and factual questions and, therefore, enforceability cannot be predicted with any certainty. Issued patents and patents issuing from pending applications may be challenged, invalidated, or circumvented. Moreover, third parties could practice our inventions in territories where we do not have patent protection. Such third parties may then try to import products made using our inventions into the United States or other territories. Additional uncertainty may result from potential passage of patent reform legislation by the United States Congress, legal precedent as handed down by the United States Federal Circuit and Supreme Court as they determine legal issues concerning the scope and construction of patent claims and inconsistent interpretation of patent laws by the lower courts. Accordingly, we cannot ensure that any of our pending patent applications will result in issued patents, or even if issued, predict the breadth of the claims upheld 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 pending applications, (ii) we were the first to file patent applications for these inventions, and (iii) the proprietary technologies we develop will be patentable.

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, and we cannot be certain that the steps we have taken will prevent unauthorized use of our technology, particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the United States. If competitors are able to use our technology, our ability to compete effectively could be harmed. Moreover, others may independently develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, we may need to license these technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could cause harm to our business.

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 ensure that patents have not been issued to third parties that could block our ability to obtain patents or to operate as we would like. There may be patents in some countries that, if valid, may block our ability to make, use or sell our products in those countries, or import our products into those countries, if we are unsuccessful in circumventing or acquiring the 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.

Table of Contents

The biotechnology industry is characterized by frequent and extensive litigation regarding patents and other intellectual property rights, and we believe that the various bioindustrial markets will also be characterized by this type of litigation. Many biotechnology companies have employed intellectual property litigation as a way to gain a competitive advantage. Our involvement in litigation, interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States, to defend our intellectual property rights or as a result of alleged infringement of the rights of others, may divert management time from focusing on business operations and could cause us to spend significant amounts of money. Any potential intellectual property litigation also could force us to do one or more of the following:

- stop selling, incorporating or using our products that use the subject intellectual property;
- obtain from the 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; or
- redesign those products or processes that use any allegedly infringing technology, or relocate the operations relating to the allegedly infringing technology to another jurisdiction, which may result in significant cost or delay to us, or which could be technically infeasible.

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. We cannot assure you that if this third party intellectual property is asserted against us that we would ultimately prevail.

If any of our competitors have filed patent applications or obtained patents that claim inventions also claimed by us, we may have to participate in interference proceedings declared by the relevant patent regulatory agency to determine priority of invention and, thus, the right to the patents for these inventions in the United States. 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. Any litigation or proceedings could divert our management s time and efforts. Even unsuccessful claims could result in significant legal fees and other expenses, diversion of management time, and disruption in our business. Uncertainties resulting from initiation and continuation of any patent or related litigation could harm our ability to compete.

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

The laws of some foreign countries, including India, where we manufacture pharmaceutical intermediates and APIs through contract manufacturers, do not protect intellectual property rights to the same extent as the laws of the United States. Many companies have encountered significant problems in protecting and defending 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 biotechnology and/or bioindustrials 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 patent 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 protect our intellectual property rights in such countries may be inadequate.

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 often 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 that may be able to reproduce these biocatalysts for their own commercial gain. If this were to occur, it would be difficult for us to challenge this type of use, especially in countries with limited intellectual property protection.

Table of Contents

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 inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, 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.

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.

The biocatalysis industry and each of our target markets are characterized by rapid technological change. Our future success will depend on our ability to maintain a competitive position with respect to technological advances. We are aware that other companies, including Verenium Corporation (formed by the merger of Diversa Corporation and Celunol Corporation), Royal DSM N.V., or DSM, Danisco/Genencor, Novozymes and E.I. Du Pont De Nemours and Company, or DuPont, have alternative methods for obtaining and generating genetic diversity or use mutagenesis techniques to produce genetic diversity. Academic institutions such as the California Institute of Technology, the Max Planck Institute and the Center for Fundamental and Applied Molecular Evolution (FAME), a jointly sponsored initiative between Emory University and Georgia Institute of Technology, are also working in this field. Technological development by others may result in our products and technologies, as well as products developed by our customers using our biocatalysts, becoming obsolete.

We face intense competition in the pharmaceuticals market. There are a number of companies who compete with us throughout the various stages of a pharmaceutical product s lifecycle. Many large pharmaceutical companies have internal capabilities to develop and manufacture intermediates and APIs. These companies include many of our large innovator and generic pharmaceutical customers, such as Merck, Pfizer and Teva Pharmaceutical Industries Ltd. There are also many large, well-established fine chemical manufacturing companies, such as DSM, BASF Corporation and Lonza Group Ltd, that compete to supply pharmaceutical intermediates and APIs to our customers. We also face increasing competition from generic pharmaceutical manufacturers in low cost centers such as India and China.

In addition to competition from companies manufacturing APIs and intermediates, we face competition from companies that sell biocatalysts for use in the pharmaceutical market. There is competition from large industrial enzyme companies, such as Novozymes and Amano Enzyme Inc., whose industrial enzymes (for detergents, for example) are occasionally used in pharmaceutical processes. There is also competition in this area from several small companies with product offerings comprised primarily of naturally occurring biocatalysts or that offer biocatalyst optimization services.

We expect the biofuels industry to be extremely competitive, with competition coming from ethanol producers as well as other providers of alternative and renewable fuels. Significant competitors include companies such as: Novozymes, 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

Table of Contents

Inbicon A/S of Denmark; Danisco/Genencor, which has formed a joint venture with DuPont, called DuPont Danisco Cellulosic Ethanol, or DDCE, and is marketing a line of cellulases to convert biomass into sugar; DSM, which received a grant from the U.S. Department of Energy to be the lead partner in a technical consortium including Abengoa Bioenergy New Technologies, 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 U.S.A., Inc.; and Verenium, which has entered into a research and development collaboration with BP, p.l.c and formed a joint venture with BP called Vercipia Biofuels to develop a commercial scale cellulosic ethanol facility. In addition, other companies are attempting to develop non-ethanol biofuels. DuPont has announced plans to develop and market biobutanol through Butamax Advanced Biofuels LLC, a joint venture with BP, and Virent Energy Systems Inc. is collaborating with Shell to develop thermochemical catalytic routes to produce biogasoline directly from sugars. 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. Some or all of these competitors or other competitors, as well as academic, research and government institutions, are developing or may develop technologies for, and are competing or may compete with us in, the production of alternative fuels or biofuels.

As we pursue opportunities in other bioindustrial markets, we expect to face competition from numerous companies focusing on developing biocatalytic and other solutions for these markets, including a number of the companies described above.

Our ability to compete successfully will depend on our ability to develop proprietary products that reach the market in a timely manner and are technologically superior to and/or are less expensive than other products on the market. Many of our competitors have substantially greater production, financial, research and development, personnel and marketing resources than we do. In addition, certain of our competitors may also benefit from local government subsidies and other incentives that are not available to us. As a result, our competitors may be able to develop competing and/or superior technologies and processes, and compete more aggressively and sustain that competition over a longer period of time than we could. Our technologies and products may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of our competitors. As more companies develop new intellectual property in our markets, the possibility of a competitor acquiring patent or other rights that may limit our products or potential products increases, which could lead to litigation.

In addition, various governments have recently announced a number of spending programs focused on the development of clean technology, including alternatives to petroleum-based fuels and the reduction of carbon emissions, two of our target markets. Such spending programs could lead to increased funding for our competitors or the rapid increase in the number of competitors within those markets.

Our limited resources relative to many of our competitors may cause us to fail to anticipate or respond adequately to new developments and other competitive pressures. This failure could reduce our competitiveness and market share, adversely affect our results of operations and financial position, and prevent us from obtaining or maintaining profitability.

We may need substantial additional capital in the future in order to expand our business.

Our future capital requirements may be substantial, particularly as we continue to develop our business and expand our biocatalyst discovery and development process. Although we believe that, based on our current level of operations and anticipated growth, our existing cash, cash equivalents and marketable securities will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months, we may need additional capital if our current plans and assumptions change. Our need for additional capital will depend on many factors, including the

Table of Contents

financial success of our pharmaceutical business, whether we are successful in obtaining payments from customers, whether we can enter into additional collaborations, the progress and scope of our collaborative and independent research and development projects performed by us and our collaborators, the effect of any acquisitions of other businesses or technologies that we may make in the future, whether we decide to develop an internal manufacturing capability, and the filing, prosecution and enforcement of patent claims.

If our capital resources are insufficient to meet our capital requirements, and we are unable to enter into or maintain collaborations with partners that are able or willing to fund our development efforts or commercialize any products that we develop or enable, we will have to raise additional funds to continue the development of our technology and products and complete the commercialization of products, if any, resulting from our technologies. If future financings involve the issuance of equity securities, our existing stockholders would suffer dilution. If we were permitted to raise additional debt financing, we may be subject to restrictive covenants that limit our ability to conduct our business. We may not be able to raise sufficient additional funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and continue to incur losses, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate research or development programs or the commercialization of products resulting from our technologies, curtail or cease operations or obtain funds through collaborative and licensing arrangements that may require us to relinquish commercial rights, or grant licenses on terms that are not favorable to us. If adequate funds are not available, we will not be able to successfully execute our business plan or continue our business.

The terms of our loan and security agreement with General Electric Capital Corporation and Oxford Finance Corporation may restrict our ability to engage in certain transactions.

In September 2007, we entered into a loan and security agreement with General Electric Capital Corporation, or GE Capital, and Oxford Finance Corporation, or Oxford. Pursuant to the terms of the loan and security agreement, we cannot engage in certain transactions, including disposing of certain assets, transferring capital to foreign subsidiaries, incurring additional indebtedness, declaring dividends, acquiring or merging with another entity or leasing additional real property unless certain conditions are met or unless we receive prior approval of GE Capital and Oxford. If GE Capital and Oxford do not consent to any of these actions that we desire to take, we could be prohibited from engaging in transactions which could be beneficial to our business and our stockholders.

Business interruptions could delay us in the process of developing our products and could disrupt our sales.

Our headquarters is located in the San Francisco Bay Area near known earthquake fault zones and is vulnerable to significant damage from earthquakes. We are also vulnerable to other types of natural disasters and other events that could disrupt our operations, such as riot, civil disturbances, war, terrorist acts, flood, infections in our laboratory or production facilities or those of our contract manufacturers and other events beyond our control. We do not have a detailed disaster recovery plan. In addition, we do not carry insurance for earthquakes and we may not carry sufficient business interruption insurance to compensate us for losses that may occur. Any losses or damages we incur could have a material adverse effect on our cash flows and success as an overall business. Furthermore, Shell may terminate our collaborative research agreement if a force majeure event interrupts our collaboration activities for more than ninety days.

Ethical, legal and social concerns about genetically engineered products and processes could limit or prevent the use of our products, processes, and technologies and limit our revenues.

Some of our products and processes are genetically engineered or involve the use of genetically engineered products or genetic engineering technologies. If we and/or our collaborators are not able to overcome the ethical, legal, and social concerns relating to genetic engineering, our products and processes

Table of Contents

may not be accepted. Any of the risks discussed below could result in increased expenses, delays, or other impediments to our programs or the public acceptance and commercialization of products and processes dependent on our technologies or inventions. Our ability to develop and commercialize one or more of our technologies, products, or processes could be limited by the following factors:

- public attitudes about the safety and environmental hazards of, and ethical concerns over, genetic research and genetically engineered products and processes, which could influence public acceptance of our technologies, products and processes;

- public attitudes regarding, and potential changes to laws governing ownership of genetic material, which could harm our intellectual property rights with respect to our genetic material and discourage collaborators from supporting, developing, or commercializing our products, processes and technologies; and

- governmental reaction to negative publicity concerning genetically modified organisms, which could result in greater government regulation of genetic research and derivative products.

The subject of genetically modified organisms has received negative publicity, which has aroused public debate. This adverse publicity could lead to greater regulation and trade restrictions on imports of genetically altered products.

The biocatalysts that we develop have significantly enhanced characteristics compared to those found in naturally occurring enzymes or microbes. While we produce our biocatalysts only for use in a controlled industrial environment, the release of such biocatalysts into uncontrolled environments could have unintended consequences. Any adverse effect resulting from such a release could have a material adverse effect on our business and financial condition, and we may have exposure to liability for any resulting harm.

Compliance with stringent laws and regulations may be time consuming and costly, which could adversely affect the commercialization of our biofuels products.

Any biofuels developed using our technologies will need to meet a significant number of regulations and standards, including regulations imposed by the U.S. Department of Transportation, the U.S. Environmental Protection Agency, various state agencies and others. Any failure to comply, or delays in compliance, with the various existing and evolving industry regulations and standards could prevent or delay the commercialization of any biofuels developed using our technologies and subject us to fines and other penalties.

We use hazardous materials in our business and we must comply with environmental laws and regulations. Any claims relating to improper handling, storage or disposal of these materials or noncompliance of applicable laws and regulations could be time consuming and costly and could adversely affect our business and results of operations.

Our research and development processes involve the use of hazardous materials, including chemical, radioactive, and biological materials. Our operations also produce hazardous waste. We cannot eliminate entirely the risk of accidental contamination or discharge and any resultant injury from these materials. Federal, state, and local laws and regulations govern the use, manufacture, storage, handling and disposal of, and human exposure to, these materials. We may be sued for any injury or contamination that results from our use or the use by third parties of these materials, and our liability may exceed our total assets. Although we believe that our activities conform in all material respects with environmental laws, there can be no assurance that violations of environmental, health and safety laws will not occur in the future as a result of human error, accident, equipment failure or other causes. Compliance with applicable environmental laws and regulations may be expensive, and the failure to comply with past, present, or future laws could result in the imposition of fines, third party property damage, product liability and

Table of Contents

personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations, and our liability may exceed our total assets. Liability under environmental laws can be joint and several and without regard to comparative fault. Environmental laws could become more stringent over time imposing greater compliance costs and increasing risks and penalties associated with violations, which could impair our research, development or production efforts and harm our business.

We may be sued for product liability.

The design, development, manufacture and sale of our products involve an inherent risk of product liability claims and the associated adverse publicity. We may be named directly in product liability suits relating to drugs that are produced using our biocatalysts or that incorporate our intermediates and APIs. These claims could be brought by various parties, including customers who are purchasing products directly from us, other companies who purchase products from our customers or by the end users of the drugs. We could also be named as co-parties in product liability suits that are brought against our contract manufacturers who manufacture our pharmaceutical intermediates and APIs, such as Arch. Insurance coverage is expensive and may be difficult to obtain, and may not be available in the future on acceptable terms, or at all. We cannot assure you that our contract manufacturers will have adequate insurance coverage to cover against potential claims. In addition, although we currently maintain product liability insurance for our products in amounts we believe to be commercially reasonable, if the coverage limits of these insurance policies are not adequate, a claim brought against us, whether covered by insurance or not, could have a material adverse effect on our business, results of operations, financial condition and cash flows. This insurance may not provide adequate coverage against potential losses, and if claims or losses exceed our liability insurance coverage, we may go out of business. Moreover, we have agreed to indemnify some of our customers for certain claims that may arise out of the use of our products, which could expose us to significant liabilities.

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

In general, under Section 382 of the Internal Revenue Code, a corporation that undergoes an ownership change is subject to limitations on its ability to utilize its pre-change net operating loss carryforwards, or NOLs, to offset future taxable income. If the Internal Revenue Service challenges our analysis that our existing NOLs are not subject to limitations arising from previous ownership changes, or if we undergo an ownership change in connection with or after this public offering, our ability to utilize NOLs could be limited by Section 382 of the Internal Revenue Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Internal Revenue Code. Furthermore, our ability to utilize NOLs of companies that we may acquire in the future may be subject to limitations. For these reasons, we may not be able to utilize a material portion of the NOLs reflected on our balance sheet, even if we attain profitability.

Risks Relating to this Offering

We are subject to anti-takeover provisions in our certificate of incorporation and bylaws and under Delaware law that could delay or prevent an acquisition of our company, even if the acquisition would be beneficial to our stockholders.

Provisions in our amended and restated certificate of incorporation and our bylaws, both of which will become effective upon the completion of this offering, may delay or prevent an acquisition of us. Among other things, our amended and restated certificate of incorporation and bylaws will provide for a board of directors which is divided into three classes, with staggered three-year terms and will provide that all stockholder action must be effected at a duly called meeting of the stockholders and not by a consent in writing, and will further provide that only our board of directors, the chairman of the board of directors, our

chief executive officers or president may call a special meeting of the stockholders. These provisions may also frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, who are responsible for appointing the members of our management team. Furthermore, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits, with some exceptions, stockholders owning in excess of 15% of our outstanding voting stock from merging or combining with us. Finally, our charter documents establish advanced notice requirements for nominations for election to our board of directors and for proposing matters that can be acted upon at stockholder meetings. Although we believe these provisions together provide for an opportunity to receive higher bids by requiring potential acquirers to negotiate with our board of directors, they would apply even if an offer to acquire our company may be considered beneficial by some stockholders.

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

Based on the number of shares outstanding as of February 28, 2010 and excluding any additional shares of common stock we may have to issue upon conversion of our Series E preferred stock and Series F preferred stock, as discussed in Capitalization Conversion of Our Preferred Stock, when this offering is completed, our officers, directors and existing stockholders who hold at least 5% of our stock will together control approximately 67% of our outstanding common stock. As of February 28, 2010, Maxygen, Shell and Biomedical Sciences Investment Fund Pte Ltd beneficially owned approximately 21.4%, 19.8% and 12.0% of our common stock, respectively. If these officers, directors, and principal stockholders or a group of our principal stockholders act together, they will be able to exert a significant degree of influence over our management and affairs and control matters requiring stockholder approval, including the election of directors and approval of mergers or other business combination transactions. The interests of this concentration of ownership may not always coincide with our interests or the interests of other stockholders. For instance, officers, directors, and principal stockholders, acting together, could cause us to enter into transactions or agreements that we would not otherwise consider. Similarly, this concentration of ownership may have the effect of delaying or preventing a change in control of our company otherwise favored by our other stockholders. This concentration of ownership could depress our stock price.

Our share price may be volatile and you may be unable to sell your shares at or above the offering price.

The initial public offering price for our shares will be determined by negotiations between us and representatives of the underwriters and may not be indicative of prices that will prevail in the trading market. The market price of shares of our common stock could be subject to wide fluctuations in response to many risk factors listed in this section, and others beyond our control, including:

- actual or anticipated fluctuations in our financial condition and operating results;
- the position of our cash, cash equivalents and marketable securities;
- actual or anticipated changes in our growth rate relative to our competitors;
- actual or anticipated fluctuations in our competitors operating results or changes in their growth rate;
- announcements of technological innovations by us, our collaborators or our competitors;
- announcements by us, our collaborators or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- any changes in Shell s biofuels strategy or timelines, or in our relationship with Shell, including any decision by Shell to terminate our collaboration or reduce the number of FTEs funded by Shell under our collaborative research agreement;

36

Table of Contents

any announcements or developments with respect to the proposed Shell-Cosan joint venture;

any changes in our relationship with Maxygen, or any events that impact, or are perceived to impact, the rights we have licensed from Maxygen;

announcements or developments regarding pharmaceutical products manufactured using our biocatalysts, intermediates and APIs;

the entry into, modification or termination of collaborative arrangements;

additions or losses of customers;

additions or departures of key management or scientific personnel;

competition from existing products or new products that may emerge;

issuance of new or updated research reports by securities or industry analysts;

fluctuations in the valuation of companies perceived by investors to be comparable to us;

disputes or other developments related to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;

changes in existing laws, regulations and policies applicable to our business and products, including the National Renewable Fuel Standard program, and the adoption or failure to adopt carbon emissions regulation;

announcement or expectation of additional financing efforts;

sales of our common stock by us, our insiders or our other stockholders;

share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;

general market conditions in our industry; and

general economic and market conditions, including the recent financial crisis.

Furthermore, the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions,

interest rate changes or international currency fluctuations, may negatively impact the market price of shares of our common stock. If the market price of shares of our common stock after this offering does not exceed the initial public offering price, you may not realize any return on your investment in us and may lose some or all of your investment. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management s attention from other business concerns, which could seriously harm our business.

A significant portion of our total outstanding shares of common stock is restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock. As of February 28, 2010, our three largest stockholders beneficially own, collectively, approximately 53.2% of our outstanding common stock. If one or more of them were to sell a substantial portion of the shares they hold, it could cause our stock price to decline. Based on shares outstanding as of February 28, 2010, upon completion of

Table of Contents

this offering, we will have 33,971,636 outstanding shares of common stock, assuming no exercise of the underwriters over-allotment option to purchase additional shares and excluding any additional shares of common stock we may have to issue upon conversion of our Series E preferred stock and Series F preferred stock, as discussed in Capitalization Conversion of Our Preferred Stock. This includes the 6,000,000 shares that we are selling in this offering. As of the date of this prospectus, of the remaining shares, approximately 27.5 million shares of common stock will be subject to a 180-day contractual lock-up with the underwriters, and an additional approximately 400,000 shares of common stock will be subject to a 180-day contractual lock-up with us.

In addition, as of February 28, 2010, there were 8,517,222 shares subject to outstanding options that will become eligible for sale in the public market to the extent permitted by any applicable vesting requirements, the lock-up agreements and Rules 144 and 701 under the Securities Act of 1933, as amended. Moreover, after this offering, holders of an aggregate of approximately 25,769,200 shares of our common stock, plus such additional shares of common stock, if any, that we may issue upon conversion of our Series E preferred stock and Series F preferred stock, will have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders.

We also intend to register all 1,100,000 shares of common stock that we may issue under our 2010 Equity Incentive Award Plan, plus any additional shares of common stock reserved for future grant or issuance under our 2002 Stock Plan that remain unissued, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon effectiveness of the 2010 Equity Incentive Award Plan. Once we register these shares, they can be freely sold in the public market upon issuance and once vested, subject to the 180-day lock-up periods under the lock-up agreements described in the Underwriting section of this prospectus.

No public market for our common stock currently exists and an active trading market may not develop or be sustained following this offering.

Prior to this offering, there has been no public market for our common stock. An active trading market may not develop following the completion of this offering or, if developed, may not be sustained. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. The lack of an active market may also reduce the fair market value of your shares. An inactive market may also impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire other companies or technologies by using our shares as consideration.

If securities or industry analysts do not publish research or reports about our business, or publish negative reports about our business, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our stock or change their opinion of our stock in a negative manner, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our stock price or trading volume to decline.

Purchasers in this offering will experience immediate and substantial dilution in the book value of their investment.

The initial public offering price will be substantially higher than the tangible book value per share of shares of our common stock based on the total value of our tangible assets less our total liabilities immediately following this offering. Therefore, if you purchase shares of our common stock in this offering, you will experience immediate and substantial dilution of approximately $10.87 per share in the

Table of Contents

price you pay for shares of our common stock as compared to its tangible book value, assuming an initial public offering price of $14.00 per share. To the extent outstanding options and warrants to purchase shares of common stock are exercised, there will be further dilution. For further information on this calculation, see Dilution elsewhere in this prospectus. There will also be further dilution to the extent we must issue additional shares of common stock upon conversion of our Series E preferred stock and Series F preferred stock, as discussed in Dilution Conversion of Our Preferred Stock.

We have broad discretion in the use of net proceeds from this offering and may not use them effectively.

Although we currently intend to use the net proceeds from this offering in the manner described in Use of Proceeds elsewhere in this prospectus, we will have broad discretion in the application of the net proceeds. Our failure to apply these net proceeds effectively could affect our ability to continue to develop and sell our products and grow our business, which could cause the value of your investment to decline.

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

We have never operated as a stand-alone public company. As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act, as well as related rules implemented by the Securities and Exchange Commission and The Nasdaq Stock Market, impose various requirements on public companies. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect these rules and regulations to make it more expensive for us to maintain director and officer liability insurance.

In addition, the Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, commencing in 2011, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Our compliance with Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, our stock price could decline, and we could face sanctions, delisting or investigations by The Nasdaq Global Market, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

We do not anticipate paying cash dividends, and accordingly, stockholders must rely on stock appreciation for any return on their investment.

The terms of our loan and security agreement with GE Capital and Oxford currently prohibit us from paying cash dividends on our common stock. In addition, we do not anticipate paying cash dividends in the future. As a result, only appreciation of the price of our common stock, which may never occur, will provide a return to stockholders. Investors seeking cash dividends should not invest in our common stock.

Table of Contents

FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that involve risks and uncertainties. The forward-looking statements are contained principally in the sections entitled Prospectus Summary, Risk Factors, Management s Discussion and Analysis of Financial Condition and Results of Operations and Business. These statements relate to future events or our future financial or operational performance and involve known and unknown risks, uncertainties and other factors that could cause our actual results, levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements. These risks and uncertainties are contained principally in the section entitled Risk Factors.

Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terms such as may, will, should, could, would, expects, plans, anticipates, believes, estimates, projects, predicts, poten those terms, and similar expressions and comparable terminology intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. These forward-looking statements represent our estimates and assumptions only as of the date of this prospectus and, except as required by law, we undertake no obligation to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this prospectus.

This prospectus also contains estimates and other information concerning our current and target markets that are based on industry publications, surveys and forecasts, including those generated by IMS Health, Datamonitor and the U.S. Energy Information Administration. This information involves a number of assumptions and limitations, and you are cautioned not to give undue weight to these estimates and information. These industry publications, surveys and forecasts generally indicate that their information has been obtained from sources believed to be reliable. The industry in which we operate is subject to a high degree of uncertainty and risk due to a variety of factors, including those described in Risk Factors. These and other factors could cause actual results to differ materially from those expressed in these publications, surveys and forecasts.

Table of Contents

USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately $73.6 million from the sale of 6,000,000 shares of common stock offered in this offering, based on 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 after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. A $1.00 increase (decrease) in the assumed initial public offering price of $14.00 per share would increase (decrease) the net proceeds to us from this offering by $5.6 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. If the underwriters exercise their over-allotment option in full, we estimate that our net proceeds will be approximately $85.3 million.

We intend to use the net proceeds of this offering, together with existing cash and cash equivalents, to fund working capital and other general corporate purposes, including the costs associated with being a public company. We may also use a portion of the net proceeds to acquire other businesses, products or technologies, and to increase our internal biocatalyst production capacity. We do not have agreements or commitments for any specific acquisitions at this time.

The expected use of net proceeds of this offering represents our current intentions based upon our present plan and business conditions. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. Accordingly, we will have broad discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the net proceeds of this offering.

Until we use the net proceeds of this offering, we intend to invest the net proceeds in short-term, interest-bearing, investment-grade securities. We cannot predict whether the net proceeds invested will yield a favorable return.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock, and currently do not plan to declare dividends on shares of our common stock in the foreseeable future. In addition, the terms of our loan and security agreement with General Electric Capital Corporation and Oxford Finance Corporation currently prohibit us from paying cash dividends on our common stock. We expect to retain our future earnings, if any, for use in the operation and expansion of our business. In addition, in certain circumstances, we are prohibited by various borrowing arrangements from paying cash dividends without the prior written consent of the lenders. Subject to the foregoing, the payment of cash dividends in the future, if any, will be at the discretion of our board of directors and will depend upon such factors as earnings levels, capital requirements, our overall financial condition and any other factors deemed relevant by our board of directors.

Table of Contents

CAPITALIZATION

The following table sets forth our cash, cash equivalents and marketable securities and our capitalization as of December 31, 2009:

- on an actual basis;
- on a pro forma basis to reflect:
  - the filing of a restated certificate of incorporation to authorize 100,000,000 shares of common stock and 5,000,000 shares of undesignated preferred stock;
  - the conversion of all of our outstanding shares of redeemable convertible preferred stock into 25,239,658 shares of common stock and the related conversion of all outstanding redeemable convertible preferred stock warrants to common stock warrants;
  - the reclassification of the redeemable convertible preferred stock warrant liability to stockholders equity upon the completion of this offering; and
- on a pro forma as adjusted basis to reflect the pro forma adjustments described above and our receipt of the estimated net proceeds from this offering, based on an assumed initial public offering of 6,000,000 shares at a price of $14.00 per share (the mid-point of the price range set forth on the cover page of this prospectus) and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma and pro forma as adjusted information below is illustrative only and our capitalization following the completion of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read this table together with Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and the accompanying notes appearing elsewhere in this prospectus.

	As of December 31, 2009		
	Actual	Pro Forma (unaudited)	Pro Forma As Adjusted
	(in thousands, except per share data)		
Cash, cash equivalents and marketable securities	$ 55,563	$ 55,563	$ 129,183
Redeemable convertible preferred stock warrant liability	$ 2,009	$	$
Financing obligations, net of current portion	2,574	2,574	2,574
Redeemable convertible preferred stock, $0.0001 par value per share; 26,137 shares authorized, 25,199 shares issued and outstanding, actual; no shares authorized, no shares issued and outstanding, pro forma and pro forma as adjusted	179,672		
Stockholders equity (deficit):			
Preferred stock, $0.0001 par value per share; no shares authorized, issued and outstanding, actual; 5,000 shares authorized, no shares issued and outstanding, pro forma; 5,000 shares authorized, no shares issued and outstanding, pro forma as adjusted			
Common stock, $0.0001 par value per share; 45,333 shares authorized; 2,670 shares issued and outstanding, actual; 45,333 shares authorized, 27,909 shares issued and outstanding, pro forma; 100,000 shares authorized, 33,909 shares issued and		3	3

outstanding, pro forma as adjusted			
Additional paid-in capital	15,015	196,693	270,313
Accumulated other comprehensive loss	(252)	(252)	(252)
Accumulated deficit	(159,608)	(159,608)	(159,608)
Total stockholders equity (deficit)	(144,845)	36,836	110,456
Total capitalization	$ 39,410	$ 39,410	$ 113,030

Table of Contents

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, cash equivalents and marketable securities, additional paid-in capital and stockholders equity by approximately $5.6 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.

The number of shares of common stock shown as issued and outstanding in the table is based on the number of shares of our common stock outstanding as of December 31, 2009 and excludes:

- 7,886,532 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2009 at a weighted average exercise price of $5.25 per share;
- 327,672 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2009 at a weighted average exercise price of $5.92 per share; and
- 1,100,000 shares of our common stock reserved for future issuance under our 2010 Equity Incentive Award Plan, which will become effective in connection with the consummation of this offering (including 1,553,873 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of December 31, 2009, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon the effectiveness of the 2010 Equity Incentive Award Plan).

Conversion of Our Preferred Stock

In connection with this offering, all of our outstanding preferred stock will be converted into common stock. In this prospectus, we have determined the conversion ratios of our preferred stock using 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). Due to the antidilution provisions of our certificate of incorporation that are applicable to our preferred stock, the conversion ratios of certain series of our preferred stock may be adjusted in connection with the conversion of our outstanding preferred stock into common stock in the event the initial public offering price is less than $13.71 per share, based on the estimated underwriting discounts and commissions payable by us.

If the initial public offering price is equal to or greater than $13.71 per share, each share of preferred stock would be converted into one share of common stock in connection with this offering, other than shares of Series A preferred stock, which will convert at a ratio of 1:1.01. If the initial public offering price is less than $13.71 per share, the conversion ratios of our Series E preferred stock and Series F preferred stock will be increased. Therefore, depending on the initial public offering price in this offering, the holders of the Series E preferred stock and Series F preferred stock may hold a greater percentage of the common stock to be outstanding following the issuance of the shares offered by this prospectus. The precise conversion ratio of the Series E preferred stock and Series F preferred stock will be determined by multiplying the applicable Series E preferred stock and Series F preferred stock conversion price by a fraction, (i) the numerator of which is (A) the number of shares of common stock deemed outstanding immediately prior to the sale of the shares offered hereby, plus (B) the number of shares of common stock that the aggregate consideration received by us in this offering, net of underwriting discounts and commissions, would purchase at the applicable conversion price prior to adjustment, and (ii) the denominator of which is the number of shares of common stock deemed outstanding immediately prior to the sale of the shares of common stock being offered hereby plus the total number of shares of common stock sold in this offering. For purposes of this calculation, common stock deemed outstanding as of a particular date means the sum of (x) the number of shares of common stock outstanding as of such date, (y) the number of shares of common stock into which the then outstanding preferred stock could be converted if fully converted immediately before any conversion price adjustments

Table of Contents

resulting from the applicable issuance and (z) the number of shares of common stock issuable upon the exercise of all outstanding options and warrants that are vested as of the day immediately preceding such date.

The following table shows the effect of various initial public offering prices on the Series E preferred stock and Series F preferred stock conversion ratios and on our capitalization following this offering on a pro forma as adjusted basis to reflect the applicable conversion ratio adjustments and pro forma as adjusted assumptions set forth in the capitalization table above. The initial offering prices shown below are hypothetical and illustrative.

			On a Pro Forma As Adjusted Basis as of December 31, 2009		
Initial Offering Price	**Series E and F Preferred Stock to Common Stock Conversion Ratio**	**Shares of Common Stock Issuable as a Result of Conversion Ratio Adjustment**	**Shares of Common Stock That Would Be Issued upon Conversion of All Outstanding Shares of Series E Preferred Stock**	**Shares of Common Stock That Would Be Issued upon Conversion of All Outstanding Shares of Series F Preferred Stock**	**Total Shares of Common Stock Outstanding After This Offering(1)**
$13.71 or above	1:1		4,104,512	3,686,271	33,909,280
$13.50	1:1.003147	24,511	4,117,424	3,697,870	33,933,791
$13.00	1:1.008702	67,788	4,140,223	3,718,348	33,977,068
$12.50	1:1.014319	111,550	4,163,280	3,739,053	34,020,830
$12.00	1:1.02	155,810	4,186,598	3,759,995	34,065,090
$11.50	1:1.025744	200,558	4,210,172	3,781,169	34,109,838
$11.00	1:1.032388	252,322	4,237,444	3,805,661	34,161,602
$10.50	1:1.038273	298,168	4,261,597	3,827,354	34,207,448

(1) Excludes the following:

7,886,532 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2009 at a weighted average exercise price of $5.25 per share;

327,672 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2009 at a weighted average exercise price of $5.92 per share; and

1,100,000 shares of common stock reserved for issuance under our 2010 Equity Incentive Award Plan, which will become effective in connection with the consummation of this offering (plus an additional 1,553,873 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of December 31, 2009, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon the effectiveness of the 2010 Equity Incentive Award Plan).

Table of Contents

DILUTION

If you invest in our common stock, your interest will be diluted to the extent of the difference between the public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock after this offering.

Our pro forma net tangible book value at December 31, 2009 was $32.7 million, or $1.17 per share of common stock. Pro forma net tangible book value per share represents total tangible assets less total liabilities (which includes the reclassification of redeemable convertible preferred stock warrant liability into additional paid-in capital upon the conversion of outstanding shares of preferred stock underlying warrants into shares of common stock), divided by the number of outstanding shares of common stock on December 31, 2009, after giving effect to a 2-for-3 reverse stock split of our common stock and preferred stock to be effected immediately prior to the effectiveness of the registration statement of which this prospectus forms a part and the conversion of all outstanding shares of preferred stock into shares of common stock as if the conversion occurred on December 31, 2009. Our pro forma as adjusted net tangible book value at December 31, 2009, after giving effect to the sale by us of 6,000,000 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) and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, would have been approximately $106.3 million, or $3.13 per share. This represents an immediate increase in pro forma as adjusted net tangible book value of $1.96 per share to existing stockholders and an immediate dilution of $10.87 per share to new investors, or approximately 78% of the assumed initial public offering price of $14.00 per share. The following table illustrates this per share dilution:

Assumed initial public offering price per share		$ 14.00
Pro forma net tangible book value per share at December 31, 2009	$ 1.17	
Increase in pro forma net tangible book value per share attributable to this offering	1.96	
Pro forma as adjusted net tangible book value per share after this offering		3.13
Dilution per share to new investors		$ 10.87

A $1.00 increase (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 (decrease) our pro forma as adjusted net tangible book value by $5.6 million, the pro forma as adjusted net tangible book value per share by $0.16 per share and the dilution in the pro forma net tangible book value to new investors in this offering by $0.84 per share, assuming the number of shares offered by us, as set forth on the cover pages of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The following table shows, as of December 31, 2009, the number of shares of common stock purchased from us, the total consideration paid to us and the average price paid per share by existing stockholders and by new investors purchasing common stock in this offering at an assumed initial public offering price of $14.00 per share, before deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

	Shares Purchased		Total Consideration		Average Price Per Share
	Number	Percent	Amount	Percent	
Existing stockholders	27,909,280	82.3%	$ 215,184,907	71.9%	$ 7.71
New investors	6,000,000	17.7	84,000,000	28.1	14.00
Total	33,909,280	100.0%	$ 299,184,907	100.0%	$ 8.82

Table of Contents

A $1.00 increase (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 (decrease) total consideration paid by new investors, total consideration paid by all stockholders and the average price per share paid by all stockholders by $6.0 million, $6.0 million and $0.18, respectively, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and before deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The discussion and tables in this section regarding dilution are based on 27,909,280 shares of common stock issued and outstanding as of December 31, 2009 which reflects the automatic conversion of all of our preferred stock into an aggregate of 25,239,658 shares of our common stock, and excludes:

- shares of common stock issuable upon the exercise of 7,886,532 options outstanding at a weighted average exercise price of $5.25 per share;
- shares of common stock issuable upon exercise of 327,672 warrants outstanding at a weighted average exercise price of $5.92 per share; and
- 1,100,000 shares of common stock reserved for issuance under our 2010 Equity Incentive Award Plan, which will become effective upon the completion of this offering (plus an additional 1,553,873 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of December 31, 2009, which shares will be added to the shares to be reserved under our 2010 Equity Incentive Award Plan upon the effectiveness of the 2010 Equity Incentive Award Plan).

If the underwriters exercise their over-allotment option in full, the following will occur:

- the number of shares of our common stock held by existing stockholders would decrease to approximately 80.2% of the total number of shares of our common stock outstanding after this offering; and
- the number of shares of our common stock held by new investors would increase to approximately 19.8% of the total number of shares of our common stock outstanding after this offering.

To the extent that outstanding options or warrants are exercised, you will experience further dilution. If all of our outstanding options and warrants were exercised, our pro forma net tangible book value as of December 31, 2009 would have been $76.0 million, or $2.10 per share, and the pro forma, as adjusted net tangible book value after this offering would have been $149.6 million, or $3.55 per share, causing dilution to new investors of $10.45 per share.

In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

Conversion of Our Preferred Stock

In connection with this offering, all of our outstanding preferred stock will be converted into common stock. In this prospectus, we have determined the conversion ratios of our preferred stock using 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). Due to the antidilution provisions of our certificate of incorporation that are applicable to our preferred stock, the conversion ratios of certain series of our preferred stock may be adjusted in connection with the conversion of our outstanding preferred stock into common stock in the event the initial public offering price is less than $13.71 per share, based on the estimated underwriting discounts and commissions payable by us.

Table of Contents

If the initial public offering price is equal to or greater than $13.71 per share, each share of preferred stock would be converted into one share of common stock in connection with this offering, other than shares of Series A preferred stock, which will convert at a ratio of 1:1.01. If the initial public offering price is less than $13.71 per share, the conversion ratios of our Series E preferred stock and Series F preferred stock will be increased. Therefore, depending on the initial public offering price in this offering, the holders of the Series E preferred stock and Series F preferred stock may hold a greater percentage of the common stock to be outstanding following the issuance of the shares offered by this prospectus. The precise conversion ratio of the Series E preferred stock and Series F preferred stock will be determined by multiplying the applicable Series E preferred stock and Series F preferred stock conversion price by a fraction, (i) the numerator of which is (A) the number of shares of common stock deemed outstanding immediately prior to the sale of the shares offered hereby, plus (B) the number of shares of common stock that the aggregate consideration received by us in this offering, net of underwriting discounts and commissions, would purchase at the applicable conversion price prior to adjustment, and (ii) the denominator of which is the number of shares of common stock deemed outstanding immediately prior to the sale of the shares of common stock being offered hereby plus the total number of shares of common stock sold in this offering. For purposes of this calculation, common stock deemed outstanding as of a particular date means the sum of (x) the number of shares of common stock outstanding as of such date, (y) the number of shares of common stock into which the then outstanding preferred stock could be converted if fully converted immediately before any conversion price adjustments resulting from the applicable issuance and (z) the number of shares of common stock issuable upon the exercise of all outstanding options and warrants that are vested as of the day immediately preceding such date.

The following table shows the effect of various initial public offering prices, based on the applicable Series E preferred stock and Series F preferred stock conversion ratios, on our pro forma as adjusted tangible book value per share after this offering and the dilution to new investors. The initial public offering prices shown below are hypothetical and illustrative.

	As of December 31, 2009	
Initial Public Offering Price	**Pro Forma As Adjusted Net Tangible Book Value Per Share**	**Dilution Per Share of Common Stock to New Investors in this Offering**
$13.71	$ 3.09	$ 10.62
$13.50	$ 3.05	$ 10.45
$13.00	$ 2.96	$ 10.04
$12.50	$ 2.88	$ 9.62
$12.00	$ 2.79	$ 9.21
$11.50	$ 2.71	$ 8.79
$11.00	$ 2.62	$ 8.38
$10.50	$ 2.54	$ 7.96

All information in the table above assumes the underwriters will not exercise their over-allotment option.

Table of Contents

SELECTED CONSOLIDATED FINANCIAL DATA

The following selected consolidated financial data should be read together with our consolidated financial statements and accompanying notes and Management s Discussion and Analysis of Financial Condition and Results of Operations appearing elsewhere in this prospectus. The selected 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.

We derived the consolidated statements of operations data for 2007, 2008 and 2009 and the consolidated balance sheets data as of December 31, 2008 and 2009 from our audited consolidated financial statements appearing elsewhere in this prospectus. The consolidated statement of operations data for 2005 and 2006 and the consolidated balance sheets data as of December 31, 2005, 2006 and 2007 have been derived from our audited consolidated financial statements not included in this prospectus. The data should be read in conjunction with the consolidated financial statements, related notes, and other financial information included herein.

	Years Ended December 31,				
	2005	2006	2007	2008	2009
	(in thousands, except per share amounts)				
Consolidated Statements of Operations Data:					
Revenues:					
Product	$ 2,265	$ 2,544	$ 11,418	$ 16,860	$ 18,554
Related party collaborative research and development		863	8,481	30,239	62,656
Collaborative research and development	9,363	8,403	4,733	3,062	1,652
Government grants	156	317	701	317	46
Total revenues	11,784	12,127	25,333	50,478	82,908
Costs and operating expenses:					
Cost of product revenues	2,233	1,806	8,319	13,188	16,678
Research and development	12,839	17,257	35,644	45,554	54,725
Selling, general and administrative	7,891	11,880	19,713	35,709	29,871
Total costs and operating expenses	22,963	30,943	63,676	94,451	101,274
Loss from operations	(11,179)	(18,816)	(38,343)	(43,973)	(18,366)
Interest income	245	742	1,491	1,538	180
Interest expense and other, net	(413)	(724)	(2,533)	(2,365)	(2,037)
Loss before provision (benefit) for income taxes	(11,347)	(18,798)	(39,385)	(44,800)	(20,223)
Provision (benefit) for income taxes	243	(127)	(408)	327	66
Net loss	$ (11,590)	$ (18,671)	$ (38,977)	$ (45,127)	$ (20,289)
Net loss attributable to common stockholders per share of common stock, basic and diluted	$ (11.54)	$ (16.48)	$ (23.42)	$ (18.96)	$ (7.74)
Weighted average common shares used in computing net loss per share of common stock, basic and diluted	1,004	1,133	1,665	2,380	2,622
Net loss used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)					$ (19,662)
Pro forma net loss per share of common stock, basic and diluted (unaudited)(1)					$ (0.73)
Weighted average common shares used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)					26,798

48

Table of Contents

(1) Net loss used in computing pro forma basic and diluted net loss per share of common stock, pro forma basic and diluted net loss per share of common stock and the number of weighted average common shares used in computing the pro forma basic and diluted net loss per share of common stock in the table above give effect to the automatic conversion of all of our outstanding redeemable convertible preferred stock into common stock upon the closing of this offering as if such conversion had occurred at the beginning of each period or upon issuance, if later, and excludes any additional shares of common stock we may have to issue upon conversion of our Series E preferred stock and Series F preferred stock, as discussed in Capitalization Conversion of Our Preferred Stock.

	2005	2006	December 31, 2007	2008	2009
			(in thousands)		
Consolidated Balance Sheets Data:					
Cash, cash equivalents and marketable securities	$ 7,005	$ 32,246	$ 84,070	$ 37,130	$ 55,563
Working capital	2,781	22,972	60,732	5,933	16,397
Total assets	21,380	46,659	113,541	70,882	99,036
Current and long-term financing obligations	4,017	4,073	17,477	13,681	7,942
Redeemable convertible preferred stock	37,750	77,513	132,746	132,746	179,672
Total stockholders deficit	(34,774)	(52,766)	(87,468)	(129,124)	(144,845)

Table of Contents

MANAGEMENT S DISCUSSION AND ANALYSIS OF

FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes that appear elsewhere in this prospectus. In addition to historical financial information, the following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results may differ materially from those discussed below. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this prospectus, particularly in Risk Factors.

Overview

Our proprietary technology platform enables the creation of optimized biocatalysts that make existing industrial processes faster, cleaner and more efficient than current methods and has the potential to make new industrial processes possible on a commercial scale. We have commercialized our biocatalysts in the pharmaceutical industry and are developing biocatalysts for use in producing advanced biofuels under a multi-year research and development collaboration with Shell. We are also using our technology platform to pursue biocatalyst-enabled solutions in other bioindustrial markets, including carbon management, water treatment and chemicals.

We were incorporated in Delaware in January 2002 as a wholly-owned subsidiary of Maxygen, Inc. In March 2002, we licensed from Maxygen core enabling technology and commenced operations. From 2002 until 2005, our operations focused on organizing and staffing our company and developing our technology platform. In 2005, we recognized our first revenues from product sales to the pharmaceutical industry. In 2006, we entered into our initial research and development collaboration with Equilon Enterprises LLC dba Shell Oil Products US, or Shell, an affiliate of Royal Dutch Shell plc, in the biofuels market.

To date, we have generated revenues primarily from collaborative research and development funding, pharmaceutical product sales and government grants. Our revenues have increased in each of the last three fiscal years, growing from $25.3 million in 2007, to $50.5 million in 2008 and to $82.9 million in 2009. Most of our revenues since inception have been derived from collaborative research and development arrangements, which accounted for 52%, 66% and 78% of our revenues in 2007, 2008 and 2009, respectively. Related party collaborative research and development received from Shell accounted for 33%, 60% and 76% of our revenues in 2007, 2008 and 2009, respectively. Our product sales have increased in each of the last three fiscal years, from $11.4 million in 2007, to $16.9 million in 2008 and to $18.6 million in 2009. Notwithstanding our revenue growth, we have continued to experience significant losses as we have invested heavily in research and development and administrative infrastructure in connection with growth in our business. As of December 31, 2009, we had an accumulated deficit of $159.6 million. We incurred net losses of $39.0 million, $45.1 million and $20.3 million in 2007, 2008 and 2009, respectively. In light of the growth in market acceptance of our products and services to date, we currently intend to increase our investment in research and development. We do not currently expect to achieve profitability prior to at least 2011.

We targeted the pharmaceutical industry as the first market for our products and services. In this market, we have historically entered into collaborations, which have involved complex service and intellectual property agreements under which we research and develop optimized biocatalysts for innovator pharmaceutical companies in connection with their drug development efforts. In these collaborations, we typically receive revenues in the form of one or more of the following: up-front payments, milestone payments, payments based upon the number of full-time employee equivalents, or FTEs, engaged in related research and development activities and licensing fees and royalties.

Our pharmaceutical product offerings include biocatalysts, pharmaceutical intermediates, active pharmaceutical ingredients, or APIs, and Codex Biocatalyst Panels. Our pharmaceutical customers incorporate our biocatalysts into the manufacturing processes used to produce their drugs. Our

intermediates are complex chemical substances that have been manufactured by, or on behalf of, us using our biocatalysts. Drug manufacturers use intermediates to produce the APIs used in their drugs. We believe that major pharmaceutical manufacturers are increasingly willing to outsource portions of their own internal manufacturing and to purchase intermediates that are difficult or expensive to manufacture. Our Codex Biocatalyst Panels are plates embedded with genetically diverse variants of our proprietary biocatalysts, which allow our customers to screen our biocatalysts for desired activity that is applicable to a particular pharmaceutical manufacturing process. We view our Codex Biocatalyst Panels, which we began selling in 2007, as a way to build early and broad awareness of the power and utility of our technology platform. We plan to increase our efforts to expand use of our Codex Biocatalyst Panels among our current and potential customers.

Our pharmaceutical service offerings include screening and optimization services. We use our screening services to test our customers pharmaceutical materials against our existing libraries of biocatalysts to determine whether our existing biocatalysts produce any desired activities. We then use our optimization services to improve the performance of these biocatalysts to meet customer requirements. We also use our optimization services to improve biocatalysts identified by our customers through their use of our Codex Biocatalyst Panels. The use of our panels, as well as these services, has led to sales of biocatalysts to our pharmaceutical customers.

We provide our biocatalysts, Codex Biocatalyst Panels, screening and optimization services and intermediates to our innovator customers and provide intermediates to our generics customers. We have also launched several new intermediates and APIs for the generic equivalents of branded pharmaceutical products, including Singulair and Cymbalta, in markets where these products are not subject to patent protection, and intend to sell these same intermediates and APIs for use in other markets when the patent protection for each product expires. We sell our products primarily to pharmaceutical manufacturers through our small direct sales and business development force in the United States and Europe.

In the biofuels market, we entered into a research agreement with Shell in 2006. The goal of this collaboration was to develop biocatalysts to break down renewable sources of non-food plant materials, known as cellulosic biomass, and convert them to fuels. In connection with this collaboration, we received up-front payments, research and development service payments and milestone payments.

Based on the success of this initial collaboration, in 2007, we entered into a new, expanded multi-year research and development collaboration with Shell to develop biocatalysts to convert cellulosic biomass into fermentable sugars that are used in the production of fuels and related products and to convert these sugars into fuels and related products. We received an up-front fee and are currently receiving FTE payments under this collaboration. This up-front fee is refundable under certain conditions, such as a change in control in which we are acquired by a competitor of Shell. This refundability lapses ratably over a five-year period beginning on November 1, 2007, on a straight-line basis. In March 2009, we agreed to devote to the research collaboration 128 FTEs, which are required to be funded by Shell at an annual base rate per FTE of $441,000 for FTEs located in the United States, and $350,000 for FTEs located in Hungary. These annual base rates per FTE are subject to annual adjustments based on changes in the Consumer Price Index, or CPI, for the United States and Hungary for each subsequent year of the collaboration. Until November 1, 2010, Shell has the right to reduce the number of funded FTEs under the collaborative research agreement by up to 12 FTEs following 60 days advance written notice. After November 1, 2010, Shell has the right to further reduce the number of funded FTEs, with any one reduction not to exceed 98 funded FTEs, following advance written notice. The required notice period ranges from 30 to 270 days, so the earliest an FTE reduction could take place would be December 2, 2010. Following any such reduction, Shell is subject to a standstill period of between 90 and 360 days during which period Shell cannot provide notice of any further FTE reductions. The notice and standstill periods are dependent on the number of funded FTEs reduced, with the length of notice and standstill periods increasing commensurate with the number of FTEs reduced.

We are also eligible for annual milestone payments of up to an aggregate of $25.4 million over the remaining term of the agreement, contingent upon the achievement of certain technical goals beginning in

Table of Contents

2009, and a milestone payment of $10.0 million upon achievement of certain commercial goals. In 2009, we met or exceeded each of our technical goals under the collaborative research agreement by the applicable deadlines and earned milestone payments of $4.6 million. Shell will also be required to pay us a royalty per gallon with respect to certain products manufactured using our technology platform, including liquid fuels, fuel additives and lubricants, if Shell or any of its licensees manufactures such products. With respect to cellulosic biomass converted into sugars, Shell agreed to pay us a royalty per gallon of fuel product made from those sugars. With respect to sugars converted into fuel, Shell agreed to pay us a separate royalty per gallon of fuel product. We may be entitled to receive one or both of these royalties depending on whether Shell uses our technology to commercialize one or both of these steps.

Under our research and development collaboration with Shell, we retain ownership of all intellectual property we develop, other than patent rights related to certain fuel innovations, and Shell will have an exclusive license to such intellectual property we develop. We have agreed to work exclusively with Shell until November 2012 to convert cellulosic biomass into fermentable sugars that are used in the production of fuels and related products and to convert these sugars into fuels and related products. However, Shell is not required to work exclusively with us, and could develop or pursue alternative technologies that it decides to use for commercialization purposes instead of any technology developed under our collaborative research agreement. Even if Shell decides to commercialize products based on our technologies, they have no obligation to purchase their biocatalyst supply from us. If Shell chooses to commercialize any biofuels products developed through our collaboration, we believe that the combination of our technology platform with Shell s proven project development capabilities and resources could enable a biofuels solution that extends from the conversion of cellulosic biomass into biofuels to delivery and distribution of refined biofuels to consumers at the pump.

One element of our collaboration with Shell relates to the development of cellulosic ethanol. In connection with our collaboration with Shell, we entered into a multi-party collaborative research and license agreement with Iogen Energy Corporation, or Iogen, and Shell in July 2009, which is focused on the conversion of cellulosic biomass to ethanol for commercial scale production. Iogen has agreed to pay us a royalty per gallon with respect to certain fuel products, which include liquid fuels, fuel additives and lubricants, that are covered by inventions jointly made by us and Iogen, but that are solely owned by Iogen. We will be entitled to collect royalties from Shell or Iogen for any use of our biofuels technology by Shell or Iogen. Shell can choose to commercialize cellulosic ethanol manufactured using our technology independently, or in collaboration with Iogen.

Under the terms of our license agreement with Maxygen, we are obligated to pay Maxygen a significant portion of certain types of consideration we receive in connection with our biofuels research and development, including our collaboration with Shell. The actual fees payable to Maxygen will depend on the amount, timing and type of consideration we receive, including payments from the sale of our equity securities to Shell and payments in connection with the sale of fuel products made with a biocatalyst developed using the licensed technology and/or research and development activities.

If we directly commercialize an energy product that is made using any biocatalyst developed from the technology licensed from Maxygen, we will owe Maxygen a 2% royalty on our net sales of the energy product and on amounts received from any sublicensee or third party for the use of the energy product, to the extent that we utilize such energy product to provide services to such sublicensee or third party. If we sublicense our rights under the license agreement to a third party for the development and commercialization of an energy product, we will owe Maxygen 20% of all consideration we receive from any sublicensee. Specifically, we will owe Maxygen fees in connection with consideration we receive in the form of (1) up-front option and/or license fees, (2) FTE funding for biofuels research, (3) milestone payments, (4) payments from the sale of our equity securities and (5) payments in connection with the commercialization of energy products made with a biocatalyst developed using the licensed technology.

In the case of consideration received from the sale of our equity securities to Shell, we are obligated to pay Maxygen 20% of any excess paid above $5.96 per share, the price per share of our Series D preferred

Table of Contents

stock. With regard to FTE funding, we are only obligated to pay Maxygen 20% of the portion of any consideration received in excess of a specified amount, which was initially $350,000 per year starting in September 2006, but is adjusted annually based on the published CPI for the United States. We are also obligated to reimburse up to 20% of the costs incurred by Maxygen related to the prosecution and maintenance of the patents licensed from Maxygen relating to our core technology. Further, in the event that any subsidiary or affiliate of ours develops and/or sells any energy applications using the Maxygen technology, we are obligated to transfer to Maxygen a percentage of the value of the subsidiary or affiliate that is attributable to the Maxygen technology and give Maxygen an option to acquire a percentage of the other consideration that we invest in such affiliate or subsidiary.

In connection with all consideration received from Shell relating to our biofuels research and development collaboration, we were obligated to pay Maxygen $7.9 million, $0.9 million and $5.5 million for 2007, 2008 and 2009, respectively, of which $0, $0.9 million and $1.4 million, respectively, were payments owed to Maxygen in connection with Shell s FTE funding. The payments relating to FTE funding were less than 5% of the total FTE payments we received from Shell in those periods.

Our strategy for collaborative arrangements is to retain substantial participation in the future economic value of our technology while receiving current cash payments to offset research and development costs and working capital needs. These agreements are complex and have multiple elements that cover a variety of present and future activities. In addition, certain elements of these agreements are intrinsically difficult to separate and treat as separate units for accounting purposes, especially exclusivity payments. Consequently, we expect to recognize these exclusivity payments over the term of the exclusivity period.

We have limited internal manufacturing capacity at our headquarters in Redwood City, California. We expect to rely on third-party manufacturers for commercial production of our biocatalysts for the foreseeable future. Our in-house manufacturing is dedicated to producing both our Codex Biocatalyst Panels and biocatalysts for use by our customers in pilot scale production. We also supply initial commercial quantities of biocatalysts for use by our collaborators to produce pharmaceutical intermediates and manufacture biocatalysts that we sell.

We rely on two primary contract manufacturers, CPC Biotech srl, or CPC, located in Italy, and Lactosan GmbH & Co. KG, or Lactosan, located in Austria, to manufacture substantially all of the biocatalysts used in our pharmaceutical business. We have qualified other contract manufacturers for the manufacture of our biocatalysts, but we do not currently use them for any of our supply commitments. In addition, we contract with other suppliers for the manufacture of our pharmaceutical intermediates and APIs. Since 2006, Arch Pharmalabs Limited, or Arch, of Mumbai, India has manufactured all of our commercialized drug-related products for sale to generic API manufacturers. We are party to a number of agreements with Arch that govern the commercialization of various current and future products for supply into the generic and innovator marketplaces. In addition, in February 2010, we entered into a collaboration with Dishman Pharmaceuticals and Chemicals, Ltd., or Dishman, a global manufacturer of intermediates and APIs located in India, whereby we will work exclusively with Dishman, and Dishman will work exclusively with us, with respect to the manufacture and supply of intermediates and APIs using our biocatalysts for a select group of innovator pharmaceutical companies.

We continue to evaluate whether to develop internal capabilities to manufacture biocatalysts at commercial scale. To increase our biocatalyst manufacturing capacity, we may invest in our own manufacturing capabilities through the construction of additional manufacturing facilities. The factors we will consider in deciding whether to expand our internal manufacturing capabilities include the costs and impact on our cash flow associated with developing and maintaining such capabilities, the time required to develop such capabilities, potential locations for manufacturing sites, including proximity to existing customers, taxes associated with manufacturing activities and local incentives.

Table of Contents

Our revenue stream is diversified across various industries, which should mitigate our exposure to cyclical downturns or fluctuations in any one market. Revenues during 2008 and 2009 were derived from the pharmaceuticals and biofuels markets, and consisted of collaborative research and development revenues, product sales and government grants, which are separately identified in our consolidated statements of operations. Based on our existing arrangements, we believe that revenues from both our pharmaceutical and biofuels customers should be predictable over the near term. The revenues that we expect to recognize from our collaborative research agreement with Shell should provide a high degree of visibility into our aggregate revenues for the foreseeable future.

We actively seek contract manufacturers who are willing to invest in capital equipment to manufacture our products at commercial scale. As a result, we are heavily dependent on the availability of manufacturing capacity at, and the reliability of, our contract manufacturers. We also pursue collaborations with industry leaders that allow us to leverage our collaborators engineering, manufacturing and commercial expertise, their distribution infrastructure and their ability to fund commercial scale production facilities. If our collaborators choose to utilize our technology to commercialize new products, we expect our collaborators will finance, build and operate the larger, more expensive facilities for the intermediate or end products in our markets, which will allow us to expand into new markets without having to finance or operate large industrial facilities.

Revenues and Operating Expenses

Revenues

Our revenues are comprised of collaborative research and development revenues, product revenues and government grants.

Collaborative research and development revenues include license, technology access and exclusivity fees, FTE payments, milestones, royalties, and optimization and screening fees. We report our collaborative research and development revenues under two categories consisting of revenues (i) from related parties and (ii) from all other collaborators. Related party collaborative research and development revenues consist of revenues from Shell.

Product revenues consist of sales of biocatalysts, intermediates, APIs and Codex Biocatalyst Panels.

Government grants consist of payments from government entities. The terms of these grants generally provide us with cost reimbursement for certain types of expenditures in return for research and development activities over a contractually defined period. Historically, we have received government grants from Germany and the United States and expect to receive additional grants from other governments in the future.

Cost of Product Revenues

Cost of product revenues includes both internal and third-party fixed and variable costs including amortization of purchased technology, materials and supplies, labor, facilities and other overhead costs associated with our product revenues.

Research and Development Expenses

Research and development expenses consist of costs incurred for internal projects as well as partner-funded collaborative research and development activities. These costs include license and royalty fees payable to Maxygen for consideration that we receive in connection with our biofuels collaboration, our direct and research-related overhead expenses, which include salaries and other personnel-related expenses, facility costs, supplies, depreciation of facilities, and laboratory equipment, as well as research consultants and the cost of funding research at universities and other research institutions, and are expensed as incurred. License and royalty fees payable to Maxygen may fluctuate depending on the timing and type of consideration received from Shell in connection with our biofuels research and development collaboration. Costs to acquire technologies that are utilized in research and development and that have no alternative future use are expensed

Table of Contents

when incurred. Our research and development efforts devoted to our internal product and process development projects increased from 46 projects in 2007, to 47 projects in 2008 and to 62 projects in 2009. Our internal research and development projects are typically completed in 12 to 24 months, and generally the costs associated with any single internal project during these periods were not material.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist of compensation expenses (including stock-based compensation), hiring and training costs, consulting and service provider expenses (including patent counsel related costs), marketing costs, occupancy-related costs, depreciation and amortization expenses and travel and relocation expenses.

Critical Accounting Policies and Estimates

The consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States and include our accounts and the accounts of our wholly-owned subsidiaries. The preparation of our consolidated financial statements requires our management to make estimates, assumptions, and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the applicable periods. Management bases its estimates, assumptions and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances. Different assumptions and judgments would change the estimates used in the preparation of our consolidated financial statements, which, in turn, could change the results from those reported. Our management evaluates its estimates, assumptions and judgments on an ongoing basis.

The critical accounting policies requiring estimates, assumptions, and judgments that we believe have the most significant impact on our consolidated financial statements are described below.

Revenue Recognition

When evaluating multiple element arrangements, we consider whether the components of each arrangement represent separate units of accounting. Application of the standard requires subjective determinations and requires management to make judgments about the fair values of each individual element and whether it is separable from other aspects of the contractual relationship. Revenue arrangements with multiple components are divided into separate units of accounting if certain criteria are met, including whether the delivered component has stand-alone value to the customer, and whether there is objective and reliable evidence of the fair value of the undelivered items. Consideration received is allocated among the separate units of accounting based on their respective fair values. Applicable revenue recognition criteria are then applied to each of the units.

Revenues are recognized when the four basic revenue recognition criteria are met: (1) persuasive evidence of an arrangement exists; (2) products have been delivered, transfer of technology has been completed or services have been rendered; (3) the fee is fixed or determinable; and (4) collectibility is reasonably assured.

Our primary sources of revenues consist of collaborative research and development agreements, product revenues and government grants. Collaborative research and development agreements typically provide us with multiple revenue streams, including up-front fees for licensing, exclusivity and technology access, fees for FTE services and the potential to earn milestone payments upon achievement of contractual criteria and royalty fees based on future product sales or cost savings by our customers.

For each source of collaborative research and development revenues, product revenues and grant revenues, we apply the above revenue recognition criteria in the following manner:

Up-front fees received in connection with collaborative research and development agreements, including license fees, technology access fees and exclusivity fees, are deferred upon receipt, are

Table of Contents

not considered a separate unit of accounting and are recognized as revenues over the relevant performance periods under the agreements, as discussed below.

Revenues related to FTE services are recognized as research services are performed over the related performance periods for each contract. We are required to perform research and development activities as specified in each respective agreement. The payments received are not refundable and are based on a contractual reimbursement rate per FTE working on the project. When up-front payments are combined with FTE services in a single unit of accounting, we recognize the up-front payments using the proportionate performance method of revenue recognition based upon the actual amount of research and development labor hours incurred relative to the amount of the total expected labor hours to be incurred by us, up to the amount of cash received. In cases where the planned levels of research services fluctuate substantially over the research term, we are required to make estimates of the total hours required to perform our obligations. Research and development expenses related to FTE services under the collaborative research and development agreements approximate the research funding over the term of the respective agreements.

Revenues related to milestones that are determined to be at risk at the inception of the arrangement and substantive are recognized upon achievement of the milestone event and when collectability is reasonably assured. Milestone payments are triggered either by the results of our research efforts or by events external to us, such as our collaboration partner achieving a revenue target. Fees associated with milestones for which performance was not at risk at the inception of the arrangement or that are determined not to be substantive are accounted for in the same manner as the up-front fees, provided collectability is reasonably assured.

We recognize revenues from royalties based on licensees sales of products using our technologies. Royalties are recognized as earned in accordance with the contract terms when royalties from licensees can be reasonably estimated and collectability is reasonably assured.

Product revenues are recognized once passage of title and risk of loss has occurred and contractually specified acceptance criteria have been met, provided all other revenue recognition criteria have also been met. Product revenues consist of sales of biocatalysts, intermediates and APIs, and Codex Biocatalyst Panels. Cost of product revenues includes both internal and third party fixed and variable costs including amortization of purchased technology, materials and supplies, labor, facilities and other overhead costs associated with our product revenues.

We license mutually agreed upon third party technology for use in our research and development collaboration with Shell. We record the license payments to research and development expense and offset related reimbursements received from Shell. Payments made by Shell to us are direct reimbursements of our costs. We account for these direct reimbursable costs as a net amount, whereby no expenses or revenues are recorded for the costs reimbursed by Shell. For any payments not reimbursed by Shell, we will recognize these as expenses in the statement of operations. We elected to present the reimbursement from Shell as a component of our research and development expense since presenting the receipt of payment from Shell as revenues does not reflect the substance of the arrangement.

We receive payments from government entities in the form of government grants. Government grants are agreements that generally provide us with cost reimbursement for certain types of expenditures in return for research and development activities over a contractually defined period. Revenues from government grants are recognized in the period during which the related costs are incurred, provided that the conditions under which the government grants were provided have been met and we have only perfunctory obligations outstanding.

Shipping and handling costs charged to customers are recorded as revenues. Shipping costs are included in our cost of product revenues. Such charges were not significant in any of the periods presented.

Table of Contents

Stock-Based Compensation

Prior to January 1, 2006, we accounted for stock-based employee compensation arrangements using the intrinsic value method required at the time. Under the intrinsic value method, compensation expense for employees is based on the intrinsic value of the option, determined as the excess, if any, of the fair value of the common stock over the exercise price of the option on the date of grant. Historically, our stock options have been granted with exercise prices at or above the estimated fair value of our common stock on the date of grant.

Effective January 1, 2006, we began recognizing compensation expense related to share-based transactions, including the awarding of employee stock options, based on the estimated fair value of the awards granted. We adopted this fair value method using the prospective transition method, as options granted prior to January 1, 2006 were measured using the minimum value method for the pro forma disclosures previously required. In accordance with the prospective transition method, we continued to account for non-vested employee share-based awards outstanding at the date of adoption using the intrinsic value method. All awards granted, modified or settled after January 1, 2006 have been accounted for using the fair value method.

We account for stock options issued to non-employees based on their estimated fair value determined using the Black-Scholes option-pricing model. The fair value of the options granted to non-employees is remeasured as they vest, and the resulting increase in value, if any, is recognized as expense during the period the related services are rendered.

The following table summarizes the options granted from January 2008 through the date of this prospectus with their exercise prices, the fair value of the underlying common stock, and the intrinsic value per share, if any:

Date of Issuance	Number of Shares Subject to Options Granted	Exercise Price per Share	Fair Value of Common Stock per Share	Intrinsic Value
January 29, 2008	730,311	$ 10.50	$ 9.38	
May 22, 2008	166,666	11.85	11.85	
September 25, 2008(1)	6,666	6.86	10.79	3.93
September 25, 2008	499,976	10.79	10.79	
June 2, 2009	1,121,967	7.46	7.46	
August 5, 2009	250,944	7.40	7.40	
November 9, 2009	594,497	9.09	9.09	
December 1, 2009	70,665	9.09	9.09	
December 14, 2009	83,332	9.09	9.09	
February 11, 2010	776,981	10.92	10.92	
March 11, 2010	106,498	11.87	11.87	
	4,408,503			

(1) The exercise price of this stock option was the then-current fair value of our common stock when the employee joined our company, but such stock option was not issued until September 25, 2008, when the fair value of our common stock had increased to $10.79 per share. The stock option was subsequently cancelled, unexercised, shortly after grant when the employee left our company.

Significant Factors, Assumptions and Methodologies Used in Determining Fair Value

We have estimated the fair value of our stock option grants on or after January 1, 2006 using the Black-Scholes option-pricing model. We calculate the estimated volatility rate based on selected companies in similar markets, due to a lack of historical information regarding the volatility of our stock

57

Table of Contents

price. We will continue to analyze the historical stock price volatility assumption as more historical data for our common stock becomes available. Due to our limited history of grant activity, we calculate the expected life of options granted to employees using the simplified method permitted by the SEC as the average of the total contractual term of the option and its vesting period. The risk-free rate assumption was based on U.S. Treasury instruments whose terms were consistent with the terms of our stock options. The expected dividend assumption was based on our history and expectation of dividend payouts. The fair value of the stock options granted was based on the following assumptions:

	Years ended December 31,	
	2008	2009
Weighted-average expected term (years)	6.1	6.3
Weighted-average expected volatility	57%	74%
Weighted-average risk-free interest rates	3.2%	2.6%
Expected dividend yield	0.0%	0.0%

We recognized a total of $1.3 million in stock-based compensation expense during 2007, of which $1.0 million was attributable to employee stock options and $0.2 million was attributable to non-employee stock options. Of these amounts, $0.8 million was recorded as a selling, general and administrative expense while $0.5 million was recorded as a research and development expense. We recognized a total of $3.5 million in stock-based compensation expense during 2008, of which $3.2 million was attributable to employee stock options and $0.3 million was attributable to non-employee stock options. Of these amounts, $2.0 million was recorded as selling, general and administrative expense while $1.5 million was recorded as a research and development expense. At December 31, 2009, there was $13.7 million of unrecognized stock-based compensation cost which is expected to be recognized over an average period of 2.8 years. We recognized a total of $4.8 million in stock-based compensation expense during 2009, of which $4.7 million was attributable to employee stock options and $0.2 million was attributable to non-employee stock options. Of these amounts, $2.5 million was recorded as a selling, general and administrative expense, while $2.3 million was recorded as a research and development expense.

Common Stock Valuations

The fair values of the common stock underlying our stock options were estimated contemporaneously by our board of directors with input from management based upon several factors, including progress and milestones attained in our business, projected sales and earnings for multiple future periods, and the probabilities of various financing and liquidation events, including winding up and dissolution. In determining the fair market value of our common stock as of the date of each option grant, our board of directors made a reasonable estimate of the then current value of our common stock. In the absence of a public trading market for our common stock, our board of directors was required to estimate the fair value of our common stock. Our board of directors considered numerous objective and subjective factors in determining the fair value of our common stock at each option grant date, including but not limited to the following factors: (i) prices of preferred stock issued by us primarily to outside investors in arm s-length transactions, and the rights, preferences and privileges of the preferred stock relative to the common stock; (ii) our performance and the status of research and product development efforts; (iii) our stage of development and business strategy; and (iv) the likelihood of achieving a liquidity event for the shares of common stock underlying these stock options, such as an initial public offering or sale of our company, given then-prevailing market conditions.

All stock options were granted with exercise prices at or above the then-current fair market value of our common stock as determined by our board of directors, other than an option for 6,666 shares that was cancelled, unexercised, shortly after grant. We believe that the determinations of the value of our common stock were fair and reasonable at the time they were made. The board of directors utilized methodologies, approaches and assumptions consistent with the American Institute of Certified Public Accountants Practice Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, or the AICPA Practice Guide.

Table of Contents

For our contemporaneous and retrospective valuations performed between December 2006 and December 2009 the board of directors used the probability-weighted expected return method, or the PWERM, which is consistent with the allocation methods outlined in the AICPA Practice Guide. The PWERM analyzes the returns afforded to common equity holders under multiple future scenarios. Under the PWERM, share value is based upon the probability-weighted present value of expected future net cash flows (distributions to shareholders), considering each of the possible future events and giving consideration for the rights and preferences of each share class. The PWERM requires a five step process: (i) for each possible future event, standard valuation methodologies, such as the application of revenues and earnings multiples from a relevant peer group, are used to estimate a range of future distribution values over a range of event dates; (ii) for each combination of value and date, the value is allocated between the share classes; (iii) the expected return for each class is then discounted back to the present; (iv) the probability for each possible event is estimated; and (v) the probability-weighted return, expressed in terms of a per-share value, is determined for each class. Although this method is complex to implement, the board of directors believes that this method s forward-looking analysis of potential future outcomes makes it the most suitable for this analysis.

The PWERM-derived fair value calculated at each valuation date was then allocated to the shares of redeemable and/or convertible preferred stock, warrants to purchase shares of preferred stock, and common stock, using a contingent claim methodology. This methodology treats the various components of our capital structure as a series of call options on the proceeds expected from the sale of the company or the liquidation of our assets at some future date. The anticipated timing of a liquidity event utilized in these valuations was based on the then-current plans and estimates of our board of directors and management regarding the likely success of an initial public offering. Estimates of the volatility of our stock were based on the limited information available on the volatility of the capital stock of comparable publicly-traded companies.

We granted stock options with exercise prices between $10.92 and $11.87 per share during the first fiscal quarter of 2010. We granted stock options with exercise prices between $7.40 and $9.09 per share during 2009. We granted stock options with exercise prices between $6.86 and $11.85 per share during 2008. No single event caused the valuation of our common stock to increase or decrease from January 2008 to March 2010; rather, it has been a combination of the following factors that led to the changes in the fair value of the underlying common stock:

January 2008: In January 2008, we appointed a new President for Codexis Pharmaceuticals, opened a new European facility in Hungary and introduced a new product. Also, our board of directors selected investment banks to act as managing underwriters for a potential initial public offering of our stock. As a result of these events, on January 29, 2008, the fair value of our common stock was estimated to be $9.38 per share.

February 2008 to May 2008: In April 2008, we filed a registration statement on Form S-1 with the SEC for a potential initial public offering of our common stock. As a result, on May 22, 2008, the estimated fair value of our common stock increased to $11.85 per share.

May 2008 to June 2008: In June, we entered into two new collaborative research agreements to provide our Codex Biocatalyst Panels and screening services. As a result, on June 30, 2008, the estimated fair value of our common stock increased to $12.15 per share.

July 2008 to September 2008: In September 2008, we determined market conditions had deteriorated and volatility had increased and we filed to withdraw our registration statement on Form S-1 with the SEC. We deemed the probability of an initial public offering to have significantly decreased in the near term. We also announced an expansion of our agreement with Arch. However, due primarily to the conditions in the equity markets which had led to the withdrawal of our earlier registration statement, as of September 25, 2008, the estimated fair value of our common stock decreased to $10.79 per share.

Table of Contents

October 2008 to December 2008: In November 2008, we announced a technology license agreement with Dyadic International. We also began discussions with Shell and other potential investors regarding a Series F preferred stock financing. Due to prevailing market conditions, we determined it was highly unlikely that an initial public offering would be consummated in 2009. As a result of such conditions, on December 31, 2008, the estimated fair value of our common stock decreased to $8.13 per share.

January 2009 to March 2009: In March 2009, we completed the first closing of our Series F preferred stock financing, led by Shell, raising $30.0 million. We also expanded our amended and restated collaborative research agreement with Shell. Despite these events, because of the conditions in the equity markets, as of March 31, 2009, the estimated fair value of our common stock decreased to $7.44 per share.

April 2009 to July 2009: In May 2009, we appointed a Senior Vice President of Research and Development and a Chief Science Officer. We announced an agreement with F. Hoffman-La Roche Ltd., or Roche, under which Roche will purchase our Codex Biocatalyst Panels. We raised $15.0 million through additional closings of sales of our Series F preferred stock. Although revenues were up 105% for the first seven months of 2009 compared to 2008, we were still recording losses during this period. As a result of the dilutive effect from having additional potential common shares as compared to the prior valuation, the estimated fair value of our common stock decreased to $7.40 per share.

August 2009 to September 2009: In August 2009, we underwent certain restructuring activities which included closing our German facility and relocating operations into other facilities. By late August 2009, conditions in the equity markets had improved and continued to improve into September 2009. Based on these events, on September 29, 2009, the estimated fair value of our common stock increased to $9.09 per share.

October 2009 to December 2009: In November 2009, we appointed a new Senior Vice President and Chief Financial Officer and raised $2.0 million through an additional closing of sales of our Series F preferred stock. In December 2009, we purchased a minority stake in and signed a joint research and development agreement with CO_2 Solution Inc. for the development of technologies in the capture of carbon dioxide from power plants and other industrial sources. Also in December 2009, we filed a registration statement on Form S-1 with the SEC for a potential initial public offering. Based on these events, on December 31, 2009, the estimated fair value of our common stock increased to $10.41.

January 2010 to February 2010: During this period, we continued to make progress in our preparation for a potential initial public offering. In addition, on February 1, 2010, Shell International Petroleum Company Limited, or Shell International, an affiliate of Shell, announced that it had signed a non-binding memorandum of understanding with Cosan S.A., with the intention of forming a joint venture in Brazil for the production of ethanol, sugar and power, and the supply, distribution and retail of transportation fuels. According to the announcement, Shell International would contribute to the joint venture Shell s equity interest in us. As of February 8, 2010, the estimated fair value of our common stock increased to $10.92.

February 2010 to March 2010: During this period, we made further progress in our preparation for a potential initial public offering. As of March 5, 2010, the estimated fair value of our common stock increased to $11.87.

Estimation of Fair Value of Warrants to Purchase Preferred Stock

Our outstanding warrants to purchase shares of our preferred stock are required to be classified as liabilities and to be adjusted to their fair value at the end of each reporting period. Warrants issued in connection with debt arrangements resulted in an aggregate expense of $1.3 million attributable to an increase in the fair value of the warrant liability recognized in interest expense and other, net in the consolidated statements of operations during 2007. In 2008, a gain of $0.1 million was recognized in interest expense and other, net as a result of warrant liability measurement. In 2009, a loss of $0.6 million was recognized in interest expense and other, net due to the warrant liability remeasurement. Upon the closing of this initial public offering and the conversion of the underlying preferred stock to common stock, all outstanding warrants to purchase shares of preferred stock will automatically convert into warrants to purchase shares of our common

Table of Contents

stock. The then-current aggregate fair value of these warrants will be reclassified from liabilities to additional paid-in capital, a component of stockholders equity, and we will cease to record any related periodic fair value adjustments. Accordingly, we estimated the fair value of these warrants on an as-if converted basis at the respective balance sheet dates using the Black-Scholes option pricing model, the remaining contractual term of the warrant, risk-free interest rates and expected dividends on and expected volatility of the price of the underlying common stock. These estimates, especially the market value of the underlying common stock and the expected volatility, are highly judgmental and could differ materially in the future.

Impairment of Goodwill and Intangible Assets and Other Long-lived Assets

We assess impairment of long-lived assets, including goodwill, on at least an annual basis and test long-lived assets for recoverability when events or changes in circumstances indicate that their carrying amount may not be recoverable. Circumstances which could trigger a review include, but are not limited to: significant decreases in the market price of the asset; significant adverse changes in the business climate or legal factors; accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of the asset; current period cash flow or operating losses combined with a history of losses or a forecast of continuing losses associated with the use of the asset; or current expectation that the asset will more likely than not be sold or disposed of significantly before the end of its estimated useful life.

Recoverability is assessed based on the sum of the undiscounted cash flows expected to result from the use and the eventual disposal of the asset. An impairment loss is recognized in the consolidated statements of operations when the carrying amount is not recoverable and exceeds fair value, which is determined on a discounted cash flow basis.

We make estimates and judgments about future undiscounted cash flows and fair value. Although our cash flow forecasts are based on assumptions that are consistent with our plans, there is significant exercise of judgment involved in determining the cash flows attributable to a long-lived asset over its estimated remaining useful life. Our estimates of anticipated future cash flows could be reduced significantly in the future. As a result, the carrying amount of our long-lived assets could be reduced through impairment charges in the future. Changes in estimated future cash flows could also result in a shortening of estimated useful life of long-lived assets including intangibles for depreciation and amortization purposes.

Income Tax Provision

We use the liability method of accounting for income taxes, whereby deferred tax assets or liability account balances are calculated at the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are provided when necessary to reduce deferred tax assets to the amount that will more likely than not be realized.

We must make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax credits, benefits and deductions and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenues and expenses for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in a subsequent period.

In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will be realized on a jurisdiction by jurisdiction basis. The ultimate realization of deferred tax assets is dependent upon the generation of taxable income in the future. We have recorded a deferred tax asset in jurisdictions where ultimate realization of deferred tax assets is more likely than not to occur.

We make estimates and judgments about our future taxable income that are based on assumptions that are consistent with our plans and estimates. Should the actual amounts differ from our estimates, the

Table of Contents

amount of our valuation allowance could be materially impacted. Any adjustment to the deferred tax asset valuation allowance would be recorded in the income statement for the periods in which the adjustment is determined to be required.

On January 1, 2007, we adopted the Financial Accounting Standards Board, or FASB, standard for accounting for uncertainty in income taxes. The revised standard, now codified under the Income Taxes Topic in the FASB Accounting Standards Codification clarifies the accounting for uncertainty in income taxes recognized in an enterprise s financial statements. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to estimate and measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. It is inherently difficult and subjective to estimate such amounts, as this requires us to determine the probability of various possible outcomes. We consider many factors when evaluating and estimating our tax positions and tax benefits, which may require periodic adjustments and may not accurately anticipate actual outcomes.

Results of Operations

Years Ended December 31, 2008 and 2009

The following table shows the amounts and percentage relationships of the listed items from our unaudited consolidated statements of operations for the periods presented, showing period-over-period changes (in thousands, except for percentages).

	2008	2009	$ Change	% Change
Revenues:				
Product	$ 16,860	$ 18,554	$ 1,694	10%
Related party collaborative research and development	30,239	62,656	32,417	107
Collaborative research and development	3,062	1,652	(1,410)	(46)
Government grants	317	46	(271)	(85)
Total revenues	50,478	82,908	32,430	64
Costs and operating expenses:				
Cost of product revenues	13,188	16,678	3,490	26
Research and development	45,554	54,725	9,171	20
Selling, general and administrative	35,709	29,871	(5,838)	(16)
Total costs and operating expenses	94,451	101,274	6,823	7
Loss from operations	(43,973)	(18,366)	25,607	(58)
Interest income	1,538	180	(1,358)	(88)
Interest expense and other, net	(2,365)	(2,037)	328	(14)

Loss before provision for income taxes	(44,800)	(20,223)	24,577	(55)
Provision for income taxes	327	66	(261)	(80)
Net loss	$ (45,127)	$ (20,289)	$ 24,838	(55)%

Revenues. Revenues increased $32.4 million, or 64%, from $50.5 million in 2008 to $82.9 million in 2009, primarily due to increases in revenues from related party collaborative research and development projects and product sales offset by reductions in revenues from other collaborative research and development projects.

Product revenues increased $1.7 million, or 10%, from $16.9 million in 2008 to $18.6 million in 2009. This increase was primarily due to an increase in product sales to a pharmaceutical customer during 2009.

Related party collaborative research and development revenues increased $32.4 million, or 107%, from $30.2 million in 2008 to $62.7 million in 2009. This increase was due to the increase in the number of FTEs engaged in our expanded research and development collaboration with Shell as well as milestone

Table of Contents

payments of $4.6 million. The expansion of this collaboration resulted in an increase in the number of contractual FTEs used during the period from an average of 62 in 2008 to an average of 126 in 2009.

Collaborative research and development revenues decreased $1.4 million, or 46%, from $3.1 million in 2008 to $1.7 million in 2009. This decrease was primarily due to the reallocation of our research resources after the completion of certain collaborative research and development projects to related party collaborative research and development projects.

Government grant revenues decreased $0.3 million, or 85%, from $0.3 million in 2008 to $46,000 in 2009.

Our top five customers accounted for 79% and 90% of our total revenues in 2008 and 2009, respectively. In 2008, Shell accounted for 60% of our total revenues. In 2009, Shell accounted for 76% of our total revenues.

Customers in the Americas accounted for 70% and 79% of our revenues, and customers outside the Americas accounted for 30% and 21% of our revenues, in 2008 and 2009, respectively. Revenues for 2008 and 2009 by geography were as follows (in thousands, except percentages):

	2008	2009	$ Change	% Change
Americas(1)	$ 35,166	$ 65,713	$ 30,547	87%
Europe	8,165	7,028	(1,137)	(14)
Asia	7,147	10,167	3,020	42
International	15,312	17,195	1,883	12
Total	$ 50,478	$ 82,908	$ 32,430	64%

(1) Primarily United States.

Cost of Product Revenues. Cost of product revenues was $13.2 million for 2008, compared to $16.7 million in 2009, an increase of $3.5 million or 26%. The increase was primarily attributable to product sales. Cost of product revenues as a percentage of product revenues increased from 78% in 2008 to 90% in 2009, primarily due to write downs of $2.0 million of inventory items, as well as a change in sales mix towards lower margin product sales during 2009. Inventory write downs included excess and obsolete inventories and the impact of the rationalization of our product offerings in connection with the closure of our facility in Germany.

Research and Development. Research and development expenses were $45.6 million in 2008, compared to $54.7 million in 2009, an increase of $9.2 million or 20%. The increase was primarily due to increased royalty fees paid to Maxygen of $4.6 million, most of which was related to Shell s increased equity investment in our company, and the remainder of which reflected the increase in FTEs. In addition, the increase was due to compensation (including stock-based compensation) and benefits of $3.0 million attributable to an increase in employee headcount in our research and development functions, and depreciation and amortization expense of $1.4 million due to expanded facilities and capital equipment. Research and development expenses included stock-based compensation expense of $1.5 million and $2.3 million during 2008 and 2009, respectively.

Selling, General and Administrative. Selling, general and administrative expenses were $35.7 million for 2008, compared to $29.9 million for 2009, a decrease of $5.8 million or 16%. The decrease was primarily due to a $3.6 million write off in 2008 of deferred initial public offering costs. We also reduced our spending on consultants, contractors and outside advisory services by $1.4 million, and travel and recruiting-related expenses decreased by $0.9 million. Selling, general and administrative expenses included stock-based compensation expense of $2.0 million and $2.5 million during 2008 and 2009, respectively.

Interest Income. Interest income was $1.5 million in 2008 compared to $0.2 million in 2009, a decrease of $1.4 million or 88%. The decrease resulted from higher average cash, cash equivalents and marketable securities balances on hand and higher average interest rates during 2008 compared to 2009.

63

Table of Contents

Interest Expense and Other, Net. Interest expense and other, net was $2.4 million in 2008, compared to $2.0 million in 2009, a decrease of $0.3 million or 14%. Interest expense and other, net in 2009 included the increase in the fair value of our redeemable convertible preferred stock warrant liability of $0.6 million, which was offset by a decrease in interest expense of $0.6 million due to the reduced debt obligation on the General Electric Capital Corporation / Oxford Finance Corporation loan, which we refer to as the GE Capital Loan, due to scheduled principal payments on these obligations.

Provision for Income Taxes. The tax provision for 2008 and 2009 primarily consisted of income taxes attributable to foreign operations.

Restructuring Charges. In 2009, our board of directors approved and committed to plans to reduce our cost structure, which included a relocation of our operations in Germany to facilities in the United States and in Singapore, a rationalization of our product offerings, closure of the facility in Germany and employee terminations in Germany and the United States. We expensed $0.4 million in employee severance and benefits, $0.4 million in lease termination costs and $0.5 million related to inventory write downs, for a total of $1.4 million. The inventory write downs of $0.5 million were included in cost of product revenues and the remaining $0.9 million was included in selling, general and administrative expenses in the consolidated statements of operations. As of December 31, 2009, $1.2 million related to these expenses has been paid or charged off and the remaining $0.2 million is recorded in other accrued liabilities on the consolidated balance sheet. We incurred total costs of approximately $1.4 million, with substantially all of the costs incurred during 2009.

Years Ended December 31, 2007 and 2008

The following table shows the amounts and percentage relationships of the listed items from our consolidated statements of operations for the periods presented, showing period-over-period changes (in thousands, except percentages).

	2007	2008	$ Change	% Change
Revenues:				
Product	$ 11,418	$ 16,860	$ 5,442	48%
Related party collaborative research and development	8,481	30,239	21,758	257
Collaborative research and development	4,733	3,062	(1,671)	(35)
Government grants	701	317	(384)	(55)
Total revenues	25,333	50,478	25,145	99
Costs and operating expenses:				
Cost of product revenues	8,319	13,188	4,869	59
Research and development	35,644	45,554	9,910	28
Selling, general and administrative	19,713	35,709	15,996	81
Total costs and operating expenses	63,676	94,451	30,775	48
Loss from operations	(38,343)	(43,973)	(5,630)	15
Interest income	1,491	1,538	47	3
Interest expense and other, net	(2,533)	(2,365)	168	(7)
Loss before provision (benefit) for income taxes	(39,385)	(44,800)	(5,415)	14
Provision (benefit) for income taxes	(408)	327	735	NM
Net loss	$ (38,977)	$ (45,127)	$ (6,150)	16%

NM = not meaningful

Table of Contents

Revenues. From 2007 to 2008, revenues increased $25.1 million, or 99%, from $25.3 million to $50.5 million due primarily to increases in revenues from related party collaborative research and development projects and product sales.

Product revenues increased $5.4 million, or 48%, from $11.4 million in 2007 to $16.9 million in 2008. This increase was primarily due to a $4.4 million increase in sales of intermediates which began in the first quarter of 2008, and a $1.1 million increase in biocatalyst sales.

Related party collaborative research and development revenues increased $21.8 million, or 257%, from $8.5 million in 2007 to $30.2 million in 2008. This increase was due to the expansion of the research and development collaboration with Shell that took place during 2008. The expansion of this collaboration resulted in an increase in the number of contractual FTEs used during the year from an average of 13 in 2007 to an average of 62 in 2008.

Collaborative research and development revenues decreased $1.7 million, or 35%, from $4.7 million in 2007 to $3.1 million in 2008. This decrease was primarily due to a $2.4 million decrease as a result of completion of collaboration projects with two pharmaceutical customers during 2007, partially offset by a $0.7 million increase as a result of optimization services delivered to one pharmaceutical customer and additional royalties received from another pharmaceutical customer.

Government grant revenues decreased $0.4 million, or 55%, from $0.7 million in 2007 to $0.3 million in 2008. This decrease was primarily due to the completion of a grant received from the National Institutes of Health at the end of 2007.

Our top five customers accounted for 65% and 79% of total revenues for 2007 and 2008, respectively. In 2007, Shell accounted for 33% of our total revenues and Pfizer accounted for 13% of our total revenues. In 2008, Shell accounted for 60% of our total revenues and no other customer accounted for more than 10% of our total revenues.

Customers in the Americas accounted for 59% and 70% of revenues and customers outside the Americas accounted for 41% and 30% of revenues in 2007 and 2008, respectively. Revenues for 2007 and 2008 by geography were as follows (in thousands, except for percentages):

	2007	2008	$ Change	% Change
Americas(1)	$ 15,010	$ 35,166	$ 20,156	134%
Europe	4,005	8,165	4,160	104
Asia	6,318	7,147	829	13
International	10,323	15,312	4,989	48
Total	$ 25,333	$ 50,478	$ 25,145	99%

(1) Primarily United States.

Cost of Product Revenues. Cost of product revenues was $8.3 million for 2007 compared to $13.2 million in 2008, an increase of $4.9 million or 59%. The increase was primarily attributable to the 48% increase in product sales. In addition, cost of product revenues as a percentage of product revenues increased from approximately 73% in 2007 to 78% in 2008 due to a change in sales mix towards lower margin product sales in 2008.

Research and Development. Research and development expenses increased from $35.6 million for 2007 to $45.6 million for 2008, an increase of $9.9 million or 28%. The increase was primarily due to increased compensation (including stock-based compensation) and benefits of $10.5 million attributable to a 27% increase in employee headcount in our research and development functions, higher expenses incurred for lab supplies, outside services and consultants of $4.2 million, higher occupancy related costs of $1.3 million and depreciation and amortization expense of $1.4 million. These increases were partially

Table of Contents

offset by a $7.0 million decrease in fees payable to Maxygen in connection with the receipt of an up-front payment during 2007 related to our research and development collaboration with Shell. Research and development expenses included stock-based compensation expense of $0.5 million and $1.5 million during 2007 and 2008, respectively.

Selling, General and Administrative. Selling, general and administrative expenses increased from $19.7 million for 2007 to $35.7 million for 2008, an increase of $16.0 million or 81%. The increase was primarily due to increased compensation (including stock-based compensation) of $3.4 million attributable to a 45% increase in our employee headcount, primarily related to our accounting, legal, information technology and sales departments. In addition, we incurred higher costs during 2008 for consultants and outside advisory services, including $4.0 million as we prepared to become a public company and $2.4 million in patent protection costs. Also, in 2008, we expensed $3.6 million in initial public offering costs which had been deferred until the initial public offering was withdrawn in September 2008. Restructuring charges included in selling, general and administrative expenses in 2008 were $2.0 million. Expenses related to promotional marketing materials and travel increased $0.8 million. Selling, general and administrative expenses included stock-based compensation expense of $0.8 million and $2.0 million during 2007 and 2008, respectively.

Interest Income. Interest income was $1.5 million in both 2007 and 2008.

Interest Expense and Other, Net. Interest expense and other, net was $2.5 million in 2007 compared to $2.4 million in 2008, or a decrease of $0.2 million or 7%. Interest expense and other, net in 2007 included a $1.3 million expense related to the increase in the fair value of our Series D redeemable convertible preferred stock warrants. The increase in interest expense in 2008 was $1.2 million and was related to the outstanding principal on the GE Capital Loan that was drawn in September 2007.

Provision (Benefit) for Income Taxes. The tax provision for 2008 primarily consisted of foreign tax withheld at source on royalties earned overseas and other taxes attributable to foreign operations. The tax benefit for 2007 primarily consisted of benefit from reductions in deferred tax liabilities that had originated in a business acquisition, offset by foreign tax withheld at source on royalties earned overseas and other taxes attributable to foreign operations.

Restructuring Charges. In 2008, our board of directors approved and committed to plans to reduce our cost structure. The restructuring plan applied to employees and facilities worldwide. We expensed $1.1 million for facilities, $0.6 million for employees and $0.2 million in other costs associated with the closure of the Pasadena site for a total of $2.0 million in the year ended December 31, 2008. Restructuring expense was included in selling, general and administrative expenses in the consolidated statements of operations. As of December 31, 2008, $0.4 million had been paid and the remaining expenses were recorded on the consolidated balance sheet in other accrued liabilities for $0.8 million and in other long-term liabilities for $0.7 million. During 2009, $0.8 million was paid, and $0.3 million was reversed as reduction of general and administrative expense due to a change in estimated costs of restructuring due to the sublease of a facility. The amounts included in other accrual liabilities on the consolidated balance sheet as of December 31, 2009 under this restructuring plan were $0.5 million.

Liquidity and Capital Resources

Since inception, we have funded our operations through the sale of equity securities, borrowings under financing arrangements, collaborative research and development revenues, product sales and government grants. As of December 31, 2009, our cash, cash equivalents and marketable securities totaled $55.6 million. In addition, we have $0.7 million of restricted cash primarily related to letters of credit.

Table of Contents

Operating Activities

We have historically experienced negative cash flow from operations as we continue to invest in our infrastructure and our technology platform, and expand our business. Our cash flows from operations will continue to be affected principally by the extent to which we increase our headcount, primarily in research and development, in order to grow our business. The timing of hiring of skilled research and development personnel in particular affects cash flows as there is a lag between the hiring of research and development personnel and the generation of collaboration or product revenues and cash flows from those personnel. Our primary source of cash flows from operating activities is cash receipts from our customers. Our largest uses of cash from operating activities are for employee related expenditures, rent payments, inventory purchases to support our revenue growth and non-payroll research and development costs, which include payments made to Maxygen in connection with our biofuels research and development collaboration with Shell. In light of the growth in market acceptance of our products and services to date, we currently intend to increase our investment in research and development. We do not currently expect to achieve profitability prior to at least 2011.

Our operating activities in 2009 used cash in the amount of $8.7 million, primarily as a result of our net loss of $20.3 million and increases in accounts receivable of $1.1 million, offset by decreases in deferred revenues of $0.5 million primarily as a result of continuing recognition of up-front exclusivity fees we received from Shell in 2007. We also had net non-cash charges of $12.6 million, comprised primarily of $5.2 million in depreciation and amortization of property and equipment, $4.8 million in stock-based compensation expense, $1.0 million in amortization of intangible assets and $0.6 million related to the increase in the fair value of the redeemable convertible preferred stock warrants during the period.

Our operating activities used cash in the amount of $36.3 million in 2008, primarily due to our net loss of $45.1 million, an increase in inventories of $1.4 million, a decrease in a related party payable of $7.4 million, and offset by increases in accounts payable of $4.9 million and accrued liabilities of $5.3 million. These changes resulted primarily from the significant growth in our business, the timing of shipments and payments to vendors, including related parties, and our efforts to manage and monitor the balances of trade receivables. We also had net non-cash charges of $7.8 million, comprised primarily of $3.7 million in depreciation and amortization of property and equipment, $0.9 million in amortization of intangible assets, $3.5 million in stock-based compensation expense, and $0.5 million for amortization of debt discount.

Our operating activities used cash in the amount of $6.5 million in 2007, primarily due to our net loss of $39.0 million and an increase in accounts receivable of $3.1 million, partially offset by an increase in deferred revenues of $16.4 million, and an increase in accounts payable, accrued liabilities and related party payable of $14.2 million. These changes resulted primarily from the significant growth in our business, the timing of shipments and payments to vendors, our efforts to manage and monitor the balances of trade receivables, and the increase in deferred revenues due to the timing of revenue recognition under our revenue recognition policy. We also had net non-cash charges of $6.3 million, comprised primarily of $2.1 million in depreciation and amortization of property and equipment, $1.2 million in amortization of intangible assets and deferred costs, $1.3 million in stock-based compensation expense, $1.3 million related to the increase in the fair value of the redeemable convertible preferred stock warrants, and $0.5 million of expense related to preferred stock issued in exchange for services.

Based on our current level of operations and anticipated growth, we believe that our existing cash, cash equivalents and marketable securities will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months.

Investing Activities

In 2009, our investing activities used cash of $21.1 million, primarily for the net purchases of $9.1 million of marketable securities, and $10.8 million of capital expenditures. These capital expenditures consisted primarily of laboratory equipment purchases and leasehold improvements in our laboratories.

Table of Contents

Our investing activities provided cash of $7.1 million in 2008, primarily from the net proceeds from the sale and maturities of marketable securities of $14.3 million, reduced by purchases of property and equipment of $8.5 million, and a decrease in restricted cash of $1.3 million. Restricted cash reduced by $0.8 million on payment of purchase consideration to a former shareholder of BioCatalytics and by $0.6 million on expiration of a letter of credit relating to a facility lease.

Our investing activities used cash of $39.2 million in 2007, primarily from net purchases of marketable securities of $28.5 million, the purchase of property and equipment of $8.2 million to support the growth in our business, a $1.3 million increase in restricted cash and net payments of $1.2 million for the BioCatalytics acquisition. The capital expenditures consisted primarily of laboratory equipment, computer and test equipment, and software purchases.

We expect our capital expenditures to be approximately $11.6 million for 2010. We are evaluating alternatives to manufacture biocatalysts at commercial scale. In the event we decide to build additional manufacturing facilities to manufacture biocatalysts at commercial scale, our capital expenditures will increase. We may be able to obtain government subsidies to offset all or a portion of the costs of building such facilities. In the future, we will continue to make laboratory equipment purchases to support our increasing research and development efforts and growth strategy.

Financing Activities

In 2009, our financing activities provided $40.0 million in cash, primarily from the issuance and sale of 3.7 million shares of Series F preferred stock for $46.9 million, partially offset by $6.1 million in principal payments on our financing obligations.

Our financing activities used $3.9 million in cash during 2008, primarily from the $4.3 million in principal payments on our financing obligations, partially offset by $0.4 million in proceeds from the exercise of employee stock options.

Our financing activities provided cash of $68.4 million in 2007. The primary source of these funds was the issuance and sale of 4.1 million shares of Series E preferred stock and the exercise of warrants to purchase 0.3 million shares of Series D preferred stock, for an aggregate net consideration of $54.8 million from various investors. In September 2007, we borrowed a net amount of $14.8 million under the GE Capital Loan. The loan and security agreement for the GE Capital Loan, or the GE Capital Loan and Security Agreement, provides for $15.0 million in borrowings, is secured by substantially all of our assets with the exception of intellectual property, and bears interest at 9.4% per annum. The loan is to be repaid over 42 months from the date of funding, through monthly cash payments of principal and interest following six months of interest only payments. As of December 31, 2009, we had financing obligations of $7.9 million. The GE Capital Loan and Security Agreement contains a number of covenants that, among other things, restrict, subject to certain exceptions, our and our subsidiaries ability to:

- incur additional debt or issue certain types of redeemable preferred stock;
- grant liens on our assets including our intellectual property;
- sell assets including our intellectual property;
- engage in mergers and acquisitions;
- declare or pay dividends to our stockholders;
- make investments, loans and advances; and
- amend our license agreement with Maxygen.

The GE Capital Loan and Security Agreement also contains customary affirmative covenants including the requirement that we deliver certain financial statements, compliance certificates and capitalization tables

Table of Contents

to the lenders certified by our chief financial officer and provide the lenders with notice upon the occurrence of certain events. The GE Capital Loan and Security Agreement also contains customary events of default, the occurrence of which permit the lenders to declare all amounts outstanding under the GE Capital Loan and Security Agreement to be immediately due and payable. In addition, the lenders have the right to declare all amounts outstanding under the loan agreement to be immediately due and payable upon the occurrence of an event which has a material adverse effect on our business, assets or operations.

At December 31, 2009, we were in compliance with the covenants of the loan and security agreement. In January 2008, GE, as agent for the lenders, waived certain events of default arising from our failure to timely deliver to GE monthly compliance certificates, financial statements and capitalization tables for each of the months from November 2007 to January 2008 and our annual operating plan for 2008. In addition, in August 2008, GE, as agent for the lenders, waived certain events of default arising from our failure to timely deliver to GE a copy of our registration statement on Form S-1 filed on April 14, 2008, monthly compliance certificates, financial statements and capitalization tables for each of the months from February to May 2008, and annual compliance certificates and audited financial statements for the fiscal years ended December 31, 2006 and December 31, 2007. The August 2008 waiver was provided in exchange for a waiver fee of $35,000, a general release of claims against GE and the other lenders and representations from us as to the absence of any other events of default under the GE Capital Loan and Security Agreement.

Contractual Obligations and Commitments

The following summarizes the future commitments arising from our contractual obligations at December 31, 2009 (in thousands):

	Total	2010	2011	2012	2013	2014 and beyond
Loans payable(1)	$ 8,631	$ 5,920	$ 2,711	$	$	$
Operating leases(2)	6,072	2,936	1,559	1,228	349	
Total	$ 14,703	$ 8,856	$ 4,270	$ 1,228	$ 349	$

(1) Amounts include interest on obligations.
(2) Amounts net of noncancellable subleases.

The table above reflects only payment obligations that are fixed and determinable. Our commitments for operating leases primarily relate to our leased facilities in Redwood City, California.

Off-Balance Sheet Arrangements

As of December 31, 2009, we have no off-balance sheet arrangements as defined in Item 303(a)(4) of Regulation S-K as promulgated by the SEC.

Recent Accounting Pronouncements

In June 2009, the FASB issued Statement of Financial Accounting Standard, or SFAS, No. 168, *The FASB Accounting Standards Codification and the Hierarchy of Generally Accepted Accounting Principles A Replacement of FASB Statement No. 162*, or SFAS 168. SFAS 168, which is incorporated in Accounting Standards Codification, or ASC, Topic 105, *Generally Accepted Accounting Principles*, identifies the ASC as the authoritative source of generally accepted accounting principles in the United States. Rules and interpretive releases of the SEC under federal securities laws are also sources of authoritative generally accepted accounting principles for SEC registrants. We adopted the provisions of the authoritative accounting guidance during 2009 and included references to the ASC within our consolidated financial statements. The adoption had no impact on our consolidated results of operations or financial position.

Table of Contents

In September 2006, the FASB issued SFAS No. 157, *Fair Value Measurements*, or SFAS 157, which is incorporated in ASC Topic 820, *Fair Value Measurements and Disclosures*. SFAS 157 defines fair value, establishes a framework for measuring fair value and requires additional disclosures about fair value measurements. In February 2008, the FASB issued FASB Staff Position, or FSP, FAS 157-1, *Application of FASB Statement No. 157 to FASB Statement No. 13 and Other Pronouncements that Address Fair Value Measurements for Purpose of Lease Classification or Measurement under Statement 13*, which is incorporated in ASC Topic 820, which amends SFAS 157 to exclude accounting pronouncements that address fair value measurements for purposes of lease classification or measurement under SFAS No. 13, *Accounting for Leases*. In February 2008, the FASB also issued FSP SFAS No. 157-2, *Effective Date of FASB Statement No. 157*, which is incorporated in ASC Topic 820, which delays the effective date of SFAS 157 until the first quarter of 2009 for all non-financial assets and non-financial liabilities, except for items that are recognized or disclosed at fair value in the consolidated financial statements on a recurring basis, at least annually. SFAS 157 does not require any new fair value measurements but rather eliminates inconsistencies in guidance found in various prior accounting pronouncements. In April 2009, the FASB further issued FSP SFAS No. 157-4, *Determining Fair Value When the Volume and Level of Activity for the Asset or Liability Have Significantly Decreased and Identifying Transactions That Are Not Orderly,* or FSP SFAS 157-4, which is incorporated in ASC Topic 820. FSP SFAS 157-4 is effective for interim and annual periods ending after June 15, 2009, with early adoption permitted. We adopted SFAS 157 and such adoption did not have a significant effect on our consolidated results of operation or financial position.

In December 2007, the FASB ratified EITF Issue No. 07-1, *Accounting for Collaborative Agreements*, or EITF 07-1, which defines collaborative agreements as contractual arrangements that involve a joint operating activity. EITF 07-1, which is incorporated in ASC Topic 808, *Collaborative Agreements*, states that these arrangements involve two or more parties who are both active participants in the activity and that are exposed to significant risks and rewards dependent on the commercial success of the activity. EITF 07-1 provides that a company should report the effects of adoption as a change in accounting principle through retrospective application to all periods. Furthermore, it requires the parties to determine who is the principal party of the arrangement, and therefore which party must report the revenues and expenses under the collaboration arrangement, as well as specific additional disclosures in the parties financial statements. EITF 07-1 is effective for periods beginning after December 15, 2008. We adopted EITF 07-1 on January 1, 2009. The adoption did not have a significant effect on our consolidated results of operations or financial position.

In May 2009, the FASB issued SFAS No. 165, *Subsequent Events,* or SFAS 165, which is incorporated in ASC Topic 855, *Subsequent Events*. The standard establishes general standards of accounting for and disclosure of events that occur after the balance sheet date but before financial statements are issued or are available to be issued. Although there is new terminology, the standard is based on the same principles as those that currently exist in the auditing standards. The standard, which includes a new required disclosure of the date through which an entity has evaluated subsequent events, is effective for interim or annual periods ending after June 15, 2009. We adopted the provisions of this authoritative guidance during 2009. The adoption had no impact on our consolidated results of operations or financial position.

In October 2009, the FASB issued Accounting Standards Update, or ASU, 2009-13, which amends ASC Topic 605, *Revenue Recognition*, to require companies to allocate revenues in multiple-element arrangements based on an element s estimated selling price if vendor-specific or other third-party evidence of value is not available. ASU 2009-13 is effective beginning January 1, 2011. Earlier application is permitted. We are currently evaluating both the timing and the impact of the pending adoption of the ASU on our consolidated financial statements.

Table of Contents

Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Sensitivity

We had unrestricted cash, cash equivalents and marketable securities totaling $55.6 million at December 31, 2009. These amounts were invested primarily in money market funds, corporate debt obligations, U.S. government-sponsored enterprise securities, and U.S. Treasury securities and are held for working capital purposes. We do not enter into investments for trading or speculative purposes. We believe we do not have material exposure to changes in fair value as a result of changes in interest rates. Declines in interest rates, however, will reduce future investment income. If overall interest rates fell by 10% in 2009, our interest income would have declined by approximately $14,000, assuming consistent investment levels.

The terms of our GE Capital Loan provide for a fixed rate of interest, and therefore is not subject to fluctuations in market interest rates.

Foreign Currency Risk

Our operations include manufacturing and sales activities in the United States, Austria, France, Germany, Italy, Japan and India, as well as research activities in countries outside the United States, including Singapore and Hungary. As we expand internationally, our results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. For example, we purchase materials for, and pay employees at, our research facility in Singapore in Singapore dollars. In addition, we purchase products for resale in the United States from foreign companies and have agreed to pay them in currencies other than the U.S. dollar. As a result, our expenses and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. In periods when the U.S. dollar declines in value as compared to the foreign currencies in which we incur expenses, our foreign-currency based expenses increase when translated into U.S. dollars. Although it is possible to do so, we have not hedged our foreign currency since the exposure has not been material to our historical operating results. Although substantially all of our sales are denominated in U.S. dollars, future fluctuations in the value of the U.S. dollar may affect the price competitiveness of our products outside the United States. The effect of a 10% adverse change in exchange rates on foreign denominated receivables as of December 31, 2009 would have been a $0.5 million foreign exchange loss recognized as a component of interest expense and other, net in our consolidated statement of operations. We may consider hedging our foreign currency as we continue to expand internationally.

Equity Price Risk

As described further in Note 5 to the consolidated financial statements, we have an investment in common shares of CO_2 Solution Inc., a company based in Quebec City, Canada, or CO_2 Solution, whose shares are publicly traded in Canada on the TSX Venture Exchange. This investment is exposed to fluctuations in both the market price of CO_2 Solution s common shares and changes in the exchange rates between the U.S. dollar and the Canadian dollar. The effect of a 10% adverse change in the market price of CO_2 Solution s common shares as of December 31, 2009 would have been an unrealized loss of approximately $116,000, recognized as a component of other comprehensive income (loss) in stockholders equity (deficit). The effect of a 10% adverse change in the exchange rates between the U.S. dollar and the Canadian dollar as of December 31, 2009 would have been an unrealized loss of approximately $117,000, recognized as a component of other comprehensive income (loss) in stockholders equity (deficit).

Controls and Procedures

We have not performed an evaluation of our internal control over financial reporting, such as required by Section 404 of the Sarbanes-Oxley Act, nor have we engaged our independent registered public accounting firm to perform an audit of our internal control over financial reporting as of any balance sheet

Table of Contents

date or for any period reported in our financial statements. Had we performed such an evaluation or had our independent registered public accounting firm performed an audit of our internal control over financial reporting, control deficiencies, including material weaknesses and significant deficiencies, in addition to those discussed below, may have been identified.

In connection with the audit of our consolidated financial statements for 2005, 2006 and 2007, we and our independent registered public accounting firm identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of a company s annual or interim financial statements will not be prevented or detected on a timely basis. The material weakness comprised a lack of policies and procedures, with the associated internal controls, to appropriately address complex, non-routine transactions and a lack of a sufficient number of qualified personnel to timely account for such transactions in accordance with U.S. generally accepted accounting principles. These deficiencies in the design and operation of our internal controls resulted in the recording of numerous audit adjustments, and significantly delayed our financial statement close process, for the three year period ended December 31, 2007.

In connection with the audit of our consolidated financial statements for 2008, we and our independent registered public accounting firm identified a material weakness, which was related to an inadequately designed process to analyze and reconcile certain accounts and the failure of supervisors or business unit managers to review the analysis prepared for certain accounts. The material weakness affected our accruals, stock-based compensation, reimbursements under a license agreement, and inventories processes. We also identified two significant deficiencies in our internal control over financial reporting, one related to the misapplication of U.S. generally accepted accounting principles and the other related to an ineffective contract compliance process. A significant deficiency is a deficiency, or combination of deficiencies, in internal control over financial reporting that is less severe than a material weakness, yet important enough to merit attention by those responsible for oversight of a company s financial reporting.

In connection with the audit of our consolidated financial statements for 2009, we and our independent registered public accounting firm determined that the previously identified significant deficiency which related to an ineffective contract compliance process continued to exist as of December 31, 2009. Although we began to implement policies and processes to address this deficiency following the audit of our consolidated financial statements for 2008, we had not completed this implementation as of December 31, 2009.

We have taken numerous steps to address the underlying causes of the control deficiencies described above, primarily through the development and implementation of policies, improved processes and documented procedures, the retention of third-party experts and contractors, and the hiring of additional accounting and finance personnel with technical accounting, inventory accounting and financial reporting experience. The actions that we have taken are subject to ongoing senior management review, as well as audit committee oversight. We do not know the specific timeframe needed to remediate the significant deficiency identified in our 2009 audit and we may incur incremental costs associated with this remediation. If we fail to remediate deficiencies in our control environment or are unable to implement and maintain effective internal control over financial reporting to meet the demands that will be placed upon us as a public company, including the requirements of the Sarbanes-Oxley Act, we may be unable to accurately report our financial results, or report them within the timeframes required by law or exchange regulations. We will be required to meet the requirements of Section 404 of the Sarbanes-Oxley Act beginning with our fiscal year ending December 31, 2011.

Table of Contents

BUSINESS

Company Overview

Our proprietary technology platform enables the creation of optimized biocatalysts that make existing industrial processes faster, cleaner and more efficient than current methods and has the potential to make new industrial processes possible at commercial scale. We have commercialized our biocatalysts in the pharmaceutical industry and are developing biocatalysts for use in producing advanced biofuels under a multi-year research and development collaboration with Shell. We are also using our technology platform to pursue biocatalyst-enabled solutions in other bioindustrial markets, including carbon management, water treatment and chemicals.

Biocatalysts are enzymes or microbes that initiate or accelerate chemical reactions. Manufacturers have historically used naturally occurring biocatalysts to produce many goods used in everyday life. However, inherent limitations in naturally occurring biocatalysts have restricted their commercial use. Our proprietary technology platform is able to overcome many of these limitations, allowing us to evolve and optimize biocatalysts to perform specific and desired chemical reactions at commercial scale.

We have focused our biocatalyst development efforts on large and rapidly growing markets, including pharmaceuticals and advanced biofuels. We have enabled biocatalyst-based drug manufacturing processes at commercial scale and have delivered biocatalysts, intermediates and active pharmaceutical ingredients, or APIs, to some of the world s leading pharmaceutical companies, including Dr. Reddy s Laboratories Ltd., Merck & Co., Inc., Pfizer Inc. and Ranbaxy Laboratories Limited. In our collaboration with Shell, we are developing biocatalysts for use in producing advanced biofuels from renewable sources of non-food plant materials, known as cellulosic biomass.

We were incorporated in Delaware in January 2002 as a wholly-owned subsidiary of Maxygen, Inc. We commenced independent operations in March 2002, after licensing from Maxygen core enabling technology. As of February 28, 2010, Maxygen beneficially owned approximately 21.4% of our common stock. Our other investors include industry leaders such as Shell, Chevron Corporation, Pfizer and The General Electric Company.

Biocatalyst Opportunity

Biocatalyst-enabled manufacturing processes may address a number of the drawbacks of conventional chemistry-based manufacturing. For example, unlike most chemistry-based manufacturing processes, biocatalysts can operate at or near room temperature and pressure, and often use manufacturing equipment that is less complex and expensive to build and operate. Biocatalyst-enabled processes can create products with the same or higher quality as chemistry-based manufacturing processes, while reducing risks associated with extreme manufacturing environments and without generating the high volumes of waste, some of it hazardous to health and the environment, typically associated with conventional chemistry-based manufacturing processes.

In addition, due to concerns about the environment and the scarcity and security of supply of petroleum, there is an increasing interest in using cellulosic biomass as non-petroleum-based feedstocks for a variety of products, including advanced biofuels and other chemicals. To date, conventional chemistry-based manufacturing approaches have not resulted in commercially viable processes for the conversion of cellulosic biomass to biofuels and other products. Biocatalysts have the potential to enable processes for the development of products, such as cellulose-derived biofuels, that cannot currently be manufactured using alternative techniques.

Despite their potentially significant advantages, biocatalysts have not achieved their full potential in industrial applications. Naturally occurring biocatalysts are often not stable enough to be used in industrial

Table of Contents

settings, where conditions may differ significantly from those in the biocatalysts natural environments. The activity and productivity of these biocatalysts is often too limited to be cost-effective in commercial scale manufacturing. In addition, the activity of natural biocatalysts is typically inhibited by the end product of the reactions they facilitate. This characteristic of natural biocatalysts, which is referred to as product inhibition, results in limited product yields in industrial settings. Moreover, for certain industrial applications, there are no known naturally occurring biocatalysts that catalyze the desired reaction.

Due to these limitations, other companies and researchers have tried to improve the performance of naturally occurring biocatalysts by directing their evolution through biotechnology techniques such as the random mutation of genes. However, to date, these techniques have had only limited success for a number of reasons. For example, random mutations of genes often result in decreased, not improved, performance and these alternative biotechnology techniques cannot effectively remove accumulated detrimental mutations. The end result is often an evolved biocatalyst with activity that reaches a plateau at a level that is insufficient for a commercial process. We believe there is a significant opportunity for novel technologies that can address the limitations of other biotechnology techniques and can substantially enhance the performance of biocatalysts in industrial settings.

Our Platform Technology

We believe that our proprietary technology platform can transform the industrial application of biocatalysts by improving their commercially relevant characteristics, such as stability, activity, product yield and tolerance to industrial conditions, while reducing product inhibition. In addition, our technology platform allows us to develop and optimize biocatalysts much more rapidly than is currently possible with alternative methods. Perhaps most importantly, we have demonstrated that our technology platform can enable the manufacture of products cost-effectively, at commercial scale and with significantly reduced environmental impact relative to conventional manufacturing processes.

Our proprietary technology platform uses advanced biotechnology methods, bioinformatics and years of accumulated know-how to significantly expedite the process of developing optimized biocatalysts. Key components of our technology platform include gene shuffling, whole genome shuffling, multiplexed gene SOEing, and proprietary bioinformatic software tools that allow us to identify and quantify the potential value of beneficial mutations and avoid detrimental mutations.

Application in Pharmaceuticals

In the pharmaceutical market, our technology platform has significantly improved commercial scale drug manufacturing processes. Our customers have benefited from our processes and products through:

- reduced costs, including capital and operating costs;
- simplified production processes;
- decreased environmental impact; and
- increased efficiency and product yield.

For example, we have used our technology platform to develop four biocatalysts that enabled significant improvements in the manufacturing processes for key intermediates used in the production of atorvastatin, which is the active pharmaceutical ingredient, or API, in Lipitor, the world s best-selling prescription drug. Manufacturers have historically used a complex, expensive, capital intensive and hazardous chemistry-based process to produce these intermediates, called ATS-5 and ATS-8. As a result, they have long sought alternate ways to make the drug, including through biocatalysts-enabled processes. However, none of the naturally occurring enzymes that we tested showed the required activity and stability necessary for their manufacture. We first developed a new two step process using three optimized

Table of Contents

biocatalysts for the production of ATS-5, which Pfizer purchases as the starting material to make atorvastatin. Using our technology platform, we:

- significantly improved the activity and stability of all three biocatalysts, including increasing the performance of one of them, which previously showed only 0.25% of the required activity and stability, by approximately 4,000 times;
- eliminated the need for a costly purification step due to the high purity of the product that is generated by our process, resulting in additional cost savings; and
- obtained higher yields than the alternative conventional chemical processes for ATS-5.

We received a Presidential Green Chemistry Challenge Award from the United States Environmental Protection Agency for the development of our biocatalytic manufacturing process for ATS-5.

The next key isolated intermediate for atorvastatin is ATS-8, which we supply to manufacturers of generic atorvastatin. We replaced the second of three steps in the manufacture of ATS-8 with a biocatalytic reaction. Using our technology platform, we:

- significantly improved the activity and stability of the fourth biocatalyst to enable the process;
- replaced a step that previously required temperatures below -70 degrees Celsius and used hazardous agents with a benign biocatalytic step that runs at or near room temperature, eliminating the need for expensive and energy intensive cryogenic equipment; and
- obtained higher purity product, eliminating the need for a yield-reducing ATS-8 purification step.

For both ATS-5 and ATS-8, we greatly reduced the waste generated by the conventional chemistry-based processes and generated a biodegradable waste from two of the steps.

Application in Biofuels and Other Bioindustrial Markets

We are also using our technology platform to develop biocatalysts for use in producing advanced biofuels that currently cannot be manufactured cost-effectively at commercial scale. Advanced biofuels are liquid transportation fuels derived from non-food biomass and which meet certain minimum carbon reduction criteria. As part of our research and development collaboration with Shell, we have used our technology platform to:

- improve our cellulase biocatalysts to increase their production of fermentable sugars from cellulosic biomass;
- enable our cellulase biocatalysts to operate in a wider range of operating conditions; and
- develop a microbe that converts sugar to diesel fuel, which is secreted out of the cell.

In addition, we are using our technology platform to improve the yields from ethanol-producing yeast.

We are also using our technology platform to develop biocatalysts to optimize the process of removing carbon dioxide from flue gases in coal-fired energy generation plants. As part of this effort, in December 2009, we entered into an exclusive joint development agreement with CO_2 Solution Inc., or CO_2 Solution, under which we will combine our biocatalyst-enabled technology platform with CO_2 Solution s proprietary

enzymatic methods for the efficient capture of carbon dioxide from coal-fired power plants and other large sources of carbon dioxide emissions. Our biocatalysts improve the effectiveness of a range of solvents, including amine solvents, which is one of the leading potential technologies to remove carbon dioxide from flue gas. In the laboratory, these biocatalysts have exhibited increased tolerance for flue stack-type operating conditions, though not yet at target commercial levels. We also intend to use our technology platform to pursue biocatalyst solutions in other bioindustrial markets, including water treatment and chemicals.

Table of Contents

Our Business Model

Our business model allows us to simultaneously pursue multiple commercial opportunities across a number of major markets. Our business model has resulted in a diversified revenue stream that is predictable over the near term and has a significant growth potential, while allowing us to share risk with and leverage the capabilities of our collaborators. Our business model includes the following key elements:

Targeting Multiple Major and Growing Markets. We currently use our technology platform to produce biocatalysts that are used at commercial scale in the pharmaceutical market. Through our collaboration with Shell, we are developing biocatalysts for use in producing commercially viable biofuels from cellulosic biomass. We also believe that we can use our technology platform to deliver biocatalyst-enabled solutions to other bioindustrial markets, including carbon management, water treatment and chemicals.

Capital-Efficient Collaborations with Industry Leaders. We have adopted a business model that leverages our collaborators engineering, manufacturing and commercial expertise, their distribution infrastructure and their ability to fund commercial scale production facilities. For instance, in the pharmaceuticals market, our supply relationship with Arch enables us to bring intermediates and/or APIs for branded pharmaceutical products to market with very limited additional capital. In addition, if we are able to develop biocatalysts that enable the commercial production of biofuels derived from cellulosic biomass and Shell decides to commercialize products based on this technology, we would need to rely on Shell, or other parties selected by Shell, to design and build the commercial scale fuel production facilities and to distribute the final fuel product.

Diversified Revenue Base. We are generating a revenue stream that is diversified across distinct industries, which should mitigate our exposure to cyclical downturns or fluctuations in any one market. In 2009, our revenues were derived from the pharmaceuticals and biofuels markets, and consisted primarily of collaborative research and development revenues and product sales. We are pursuing biocatalyst-enabled solutions in other bioindustrial markets, including carbon management, water treatment and chemicals, that, if successful, will allow us to further diversify our revenues.

Visible and Predictable Revenues. Based on our existing arrangements, we believe that the revenues from both our biofuels and pharmaceutical businesses should be predictable over the near term. We receive bi-monthly payments from Shell that are based on the number of funded FTEs that work on our research collaboration with Shell. The number of funded FTEs that work on the program, and the payments from Shell for these FTEs, are specified in our collaborative research agreement, subject to Shell s ability to increase or reduce the number of FTEs under certain conditions over time. Because we allow our pharmaceutical customers to achieve significant cost savings in their manufacturing processes, historically they have continued using our biocatalysts once they have begun using our biocatalyst-enabled process.

Our Strategy

Our objective is to be the leading provider of optimized biocatalyst-enabled solutions across a wide range of industries. Key elements of our strategy are as follows:

Become a leading biocatalyst supplier to the advanced biofuels market. Our primary development efforts are focused on producing biocatalysts that can enable Shell to become a global leader in the advanced biofuels market. We continue to build upon our milestone-driven, multi-year collaboration with Shell as we advance our efforts to produce biofuels from cellulosic biomass cost-effectively at commercial scale. Because of our success to date, Shell has expanded our research and development collaboration twice, which we believe positions us to be a key contributor to their overall biofuels strategy.

Expand into new bioindustrial markets. We are actively pursuing opportunities in other bioindustrial markets, including through self-funded research in carbon management and the pursuit of funded collaborations in carbon management, water treatment and chemicals. We have the right to use the

Table of Contents

intellectual property developed in our collaboration with Shell in fields outside of fuels and related products. We intend to leverage this and other intellectual property and our technology platform to develop products in our other target markets.

Continue growing our pharmaceutical business. We intend to pursue new collaborations in the pharmaceutical industry to integrate our products and services more deeply into drug development and manufacturing processes for clinical stage and commercially approved pharmaceutical products. As part of that effort, we will continue to aggressively market our Codex Biocatalyst Panels to pharmaceutical companies to demonstrate the capabilities of our technology platform.

Secure access to additional production capacity. To increase our biocatalyst manufacturing capacity and establish secondary supply sources, we are working to establish long-term supply contracts with contract manufacturers and are evaluating whether to invest in our own manufacturing capabilities. We may also opportunistically seek to secure specialty manufacturing assets and expand existing relationships for the supply of our biocatalysts and key pharmaceutical APIs and intermediates used in their manufacture. For example, in August 2008, we entered into an expanded supply relationship with Arch through a series of agreements for the manufacture of intermediates and APIs for specified pharmaceutical products, which agreements were terminated in February 2010 and replaced by a product supply agreement and an enzyme and product supply agreement in order to streamline and modify certain of the contractual terms governing the supply relationship.

Expand our business and technology platform through the addition of new technologies, products or businesses. In the past, we have expanded our business by acquiring companies with synergistic business plans and licensing new technology. We will continue to evaluate opportunities to acquire or license new technologies, products or businesses that complement or expand our capabilities, including in the carbon management, water treatment and chemical markets. In addition, we intend to continue to advance our technology platform by investing in our research and development capabilities to allow us to more rapidly identify and develop products and pursue new market opportunities.

Our Pharmaceutical Business

Our Opportunity in the Pharmaceutical Market

The pharmaceutical industry represents a significant market opportunity for us. In 2008, according to IMS Health, global spending on pharmaceuticals was $773 billion. Pharmaceutical companies are now under significant competitive pressure both to reduce costs and increase the speed to market for their products. To meet these pressures, they are seeking manufacturing processes for their new products and existing drugs that reduce overall costs, simplify production and increase efficiency and product yield, while not affecting drug safety and efficacy. In addition, for products whose patents have expired, the importance of cost reduction is even higher, as the pharmaceutical manufacturers which had developed those patent-protected drugs, known as innovators, compete with generics manufacturers.

The pharmaceutical product lifecycle begins with the discovery of new chemical entities and continues through preclinical and clinical development, product launch and, ultimately, patent expiration and the transition from branded to generic products. As innovators develop, produce and then market products, manufacturing priorities and processes evolve. Historically, innovators have focused on production cost reduction in the later stages of clinical development but have been reluctant to make process changes after a product has been launched. However, as pressures to reduce costs have increased, innovators have pursued cost reduction measures much earlier in the pharmaceutical product lifecycle and are increasingly looking for opportunities to improve their operating margins, including making manufacturing process changes for marketed products if these changes can result in significant cost reductions. As a result, innovators are investing in new technologies to improve their manufacturing productivity and efficiency or outsourcing the manufacture of their intermediates and APIs.

Table of Contents

Another strategy innovators can use to reduce costs is to adopt manufacturing processes that obviate the need for costly purification of their intermediates or APIs. For example, the chemical structure of many small molecule drugs has two or more configurations, similar to a person s left and right hands. While the two or more configurations have the same chemical structures, there can be differences in their therapeutic safety and efficacy profiles. To avoid developing a drug containing configurations with detrimental effects, pharmaceutical companies are increasingly seeking to introduce new drugs containing only the desired configuration. Manufacturing the pure configurations via conventional chemistry-based processes is rarely possible in a cost-effective manner at commercial scale. These conventional chemistry-based processes typically require late-stage purification steps that reduce product yield and can significantly increase costs. Because of the high costs associated with these purification steps, significant opportunities exist for alternatives that can produce pure configurations using more efficient and less costly methods.

Generics manufacturers are also increasingly pursuing opportunities to reduce costs. The rise in patent expirations, as well as support by some governments for lower-cost alternatives to branded drugs, have led to strong growth in the generics industry. According to Datamonitor, generic competition is expected to eliminate $117 billion from top innovators worldwide sales between 2008 and 2014 as approximately three dozen drugs are expected to lose patent protection. In addition, according to IMS Health, generics products account for 64% of the total pharmaceutical market in the United States in 2008. However, because generics manufacturers compete primarily on price, they are even more cost sensitive than innovators. Lower manufacturing costs for intermediates and APIs is the key factor that helps generics companies compete and win market share. Prior to the expiration of patents on a branded drug, generics manufacturers also have significant opportunities to commercialize the generic equivalents of branded drugs in the markets which do not provide effective patent protection.

Our Solution for the Pharmaceutical Market

Our technology platform enables us to deliver solutions to our customers in the pharmaceutical market by developing and delivering optimized biocatalysts that perform chemical transformations at a lower cost, and improve the efficiency and productivity of manufacturing processes. We provide value throughout the pharmaceutical product lifecycle. Our technology platform allows us to provide benefits to our customers in a number of ways, including:

- reducing the use of raw materials and intermediate products;
- improving product yield;
- using water as a primary solvent;
- performing reactions at or near room temperature and pressure;
- eliminating the need for certain costly manufacturing equipment;
- reducing energy requirements;
- reducing the need for late-stage purification steps;
- eliminating multiple steps in the manufacturing process; and
- eliminating hazardous inputs and harmful emission by-products.

Early in the product lifecycle, customers can use our services to achieve speed to market and to reduce manufacturing costs. If an innovator incorporates our products or processes into an FDA-approved product, we expect the innovator to continue to use these products or processes for the patent life of the approved drug.

After a product is launched, customers also use our services to reduce manufacturing costs. At this stage, changes in the manufacturing process originally approved by the FDA may require additional review. Typically, pharmaceutical companies will only seek FDA approval for a manufacturing change if

Table of Contents

there are substantial cost savings associated with the change. We believe that the cost savings associated with our products may lead our customers to change their manufacturing processes for approved products and, if necessary, seek FDA approval of the new processes which incorporate our biocatalysts. Moreover, we believe these cost savings are attractive to generics manufacturers, who compete primarily on price.

We are currently working with customers on approximately 35 pharmaceutical products in various stages of the pharmaceutical product lifecycle.

Products and Services

Codex Biocatalyst Panels. We sell Codex Biocatalyst Panels to customers who are engaged in both drug development and the marketing of approved drugs to allow them to screen and identify possible biocatalytic manufacturing processes for their drug candidates and their marketed products. Our Codex Biocatalyst Panels are plates embedded with genetically diverse variants of our proprietary biocatalysts, which allow our customers to determine whether a biocatalyst produces a desired activity that is applicable to a particular process.

For compounds that are in development, our Codex Biocatalyst Panels:

- allow innovators to rapidly and inexpensively screen and identify possible biocatalytic manufacturing processes for many of their drug candidates in-house, without the risks of disclosing the composition of their proprietary molecules before they have received patent protection; and

- generate data that we can use to rapidly optimize biocatalysts for a particular reaction, if necessary, reducing the time required to generate a manufacturing process capable of supporting clinical trials with inexpensively produced, pure drugs.

We believe that our Codex Biocatalyst Panels have helped us build early and broad awareness of the power and utility of our technology platform, and will increasingly lead to sales of our biocatalyst optimization services and biocatalysts, as well as intermediates and APIs made using our biocatalysts. We currently have over ten customers for our panels, including leading pharmaceutical companies such as F. Hoffman-La Roche Ltd., GlaxoSmithKline plc, Merck, Novartis and Pfizer. If our customers incorporate a biocatalytic manufacturing process early in a product s lifecycle, they can reduce their manufacturing costs throughout that lifecycle, while we, in turn, could realize a long term revenue stream resulting from the use of our biocatalysts during that time. In addition, our Codex Biocatalyst Panels are increasingly used by our customers to evaluate the feasibility of changing the manufacturing process for their marketed products to a biocatalyst-enabled process.

Biocatalyst screening services. If a customer prefers, rather than subscribing to our Codex Biocatalyst Panels to use for their own screening, they can send us their materials to test against our existing libraries of biocatalysts. If we detect desired activity in a specific biocatalyst, we can supply the customer with this biocatalyst or perform optimization services to improve the performance of the biocatalyst.

Our screening services:

- allow innovators to rapidly and inexpensively screen and identify possible biocatalytic manufacturing processes through access to our extensive biocatalyst libraries; and

- generate data that we can use to rapidly optimize biocatalysts for a particular reaction, if necessary, reducing the time required to generate a manufacturing process capable of supporting the customers particular needs, ranging from small quantities for clinical trials to full commercial production, in all cases providing inexpensively produced, pure drugs.

We have provided screening services to numerous innovator and generic pharmaceutical manufacturers.

Table of Contents

Biocatalyst optimization services. We work with our customers throughout the pharmaceutical product lifecycle to customize proprietary biocatalysts, resulting in optimized biocatalysts that have been evolved specifically to perform a desired process according to a highly selective set of specifications.

Our biocatalyst optimization services:

- allow innovators to improve the manufacturing process as their drug candidates progress through preclinical and clinical development, deferring or reducing the need for significant manufacturing investment until the likelihood of commercial success is more certain; and
- enable manufacturing processes that are highly efficient, inexpensive, require relatively little energy, reduce the need for hazardous reagents, and reduce waste. For example, our activities with Pfizer have included developing an optimized biocatalytic manufacturing process for a key intermediate that eliminates three chemical steps.

Biocatalysts. We supply varying quantities of our proprietary biocatalysts to pharmaceutical companies, from small to moderate quantities while they are optimizing their production processes, to larger quantities during later-stage clinical development and commercial scale drug production.

Our biocatalysts:

- enable innovators to manufacture products more efficiently during preclinical and clinical development using optimized biocatalytic processes, with relatively low investment;
- eliminate the need for innovators to invest in the development of complex chemical synthesis routes during the development stage;
- allow innovators to achieve higher product purity during the development stage prior to investing in expensive late-stage clinical trials;
- reduce the risk of adverse effects arising from product impurities;
- allow the removal of entire steps from synthetic chemical production routes during commercial scale production, reducing raw material costs, energy requirements and the need for capital expenditures; and
- decrease the manufacturing costs for our customers.

For instance, as a part of our ongoing collaboration with Merck, we have developed a biocatalyst for use in a new manufacturing process for sitagliptin, the API in Merck s pharmaceutical product Januvia. Januvia is Merck s first-in-class medication for the treatment of Type II diabetes. Merck s current manufacturing process uses a high pressure chemo-catalysis platform, which requires the use of highly specialized equipment. The new biocatalyst-enabled process runs at atmospheric pressure, eliminates the need for certain highly specialized equipment and increases overall product yield.

Intermediates and APIs. We can supply our customers intermediates and APIs made using our biocatalysts throughout the drug lifecycle.

Our supply of intermediates has the following uses and benefits:

lowers capital investment for innovators through outsourcing of manufacturing; and

provides a source of less expensive, more pure products to innovator and generics manufacturers.

In the innovator market, we are currently supplying Pfizer with an intermediate in the manufacture of Lipitor. In February 2010, we entered into a collaboration with Dishman Pharmaceuticals and Chemicals, Ltd., or Dishman, a global manufacturer of intermediates and APIs located in India, to expand the application of our technology to a broader pipeline of innovator pharmaceutical products. Under our agreement with Dishman, we will work with Dishman exclusively, subject to certain exceptions, with

Table of Contents

respect to the manufacture and supply of intermediates and APIs using our biocatalysts for a select group of innovators. Dishman will also be our preferred contract manufacturing organization partner for new opportunities with other innovator pharmaceutical companies. If we achieve certain revenue targets from the sale of products or biocatalysts covered under the agreement, Dishman has a one-time right to expand its exclusive manufacturing right to all other innovator pharmaceutical companies. In the event we do not achieve subsequent revenue targets after Dishman has exercised its one-time expansion right, we may choose to convert Dishman s exclusive right back to a non-exclusive right for all such other innovators.

We have also developed biocatalysts for use in the manufacture of certain generic intermediates and APIs by various companies, including Arch and Teva Pharmaceutical Industries Ltd., or Teva. In addition, we have launched and are marketing several new intermediates and APIs for the generic equivalents of branded pharmaceutical products, including Singulair and Cymbalta, for sale in markets where innovators have not sought patent protection for their products and intend to sell these same intermediates and APIs for use in markets where innovators have sought patent protection when the patent protection for each product expires.

Our Biofuels Business

Industry Overview Need to Diversify Liquid Fuel Supply Beyond Petroleum

The world s economy is heavily dependent on petroleum. However, economic, political and environmental concerns surrounding petroleum have increased the desire to find renewable alternatives to this limited commodity.

Increasing demand for petroleum. While the United States, Europe and Japan have historically been the major consumers of petroleum, developing economies such as India and China are experiencing tremendous levels of economic growth. In 2008, China and India alone saw GDP growth rates estimated at 9.0% and 7.4%, respectively. This economic growth has created new sources of demand for petroleum, with China and India s combined share growing from 10% of the world s total energy consumption in 1990 to 19% in 2006 and forecasted to grow to 28% of the world s energy consumption by 2030.

Dependence on imported petroleum. According to the U.S. Energy Information Administration, or EIA, in 2008, the top five net oil exporting countries in the world were Saudi Arabia, Russia, the United Arab Emirates, Iran and Kuwait. The political and economic instability in some of these countries and their surrounding regions adds further uncertainty to the supply of oil. As a result, countries that have been net importers of oil are beginning to pursue approaches that provide for greater independence from these suppliers.

Expense of developing new petroleum reserves. The cost to replace known reserves is increasing significantly. Petroleum companies are now developing fields in the deep waters of the Gulf of Mexico and in the tar sands in Canada that previously would have not been economically attractive to exploit.

Rising and volatile petroleum prices. According to the EIA, worldwide petroleum prices in dollars have risen 213% and fluctuated significantly over the last ten years, from $25.01 per barrel at the beginning of December 1999, to $78.39 per barrel at the start of December 2009. In addition to rising prices, petroleum pricing has been highly volatile with significant price spikes over time, including prices reaching a record high of $145.31 per barrel in July 2008.

Limited supply of petroleum. Growth in demand for petroleum has outpaced growth in supply. The supply growth has come mostly from non-OPEC producing countries. However, this growth is expected to flatten. While OPEC producing countries may have the reserves, political instability in these regions has hindered their ability to increase production levels.

Table of Contents

Environmental concerns and regulatory initiatives. Environmental concerns over the by-products of petroleum consumption, including greenhouse gas emissions, have led to a global search for alternative solutions to the world s growing fuel needs. For example, the American Clean Energy and Security Act, otherwise known as the Waxman-Markey climate and energy bill, seeks to mandate, among other things, emission cuts and permits for emissions in certain regulated industries. In addition, in December 2009, government representatives from all over the world convened at the United Nations Framework Convention on Climate Change in Copenhagen, Denmark with the goal of creating a global climate change protocol to follow the Kyoto Protocol.

Industry Challenges and Opportunities

According to the EIA, global petroleum demand in 2008 was 86 million barrels per day. Historically, 25% of this demand has been refined into liquid transportation fuels for use in automobiles. There is a significant opportunity to diversify liquid fuel supply beyond petroleum with high-quality, energy-rich fuels produced through biocatalyst-enabled transformation of renewable cellulosic biomass sources.

A portion of the demand for biofuels will be driven by public policy. For instance, the U.S. Congress passed the Energy Independence and Security Act of 2007, an alternative fuels mandate that calls for approximately 13 billion gallons of liquid transportation fuels sold in 2010 to come from alternative sources, including biofuels, a mandate that grows to 20.5 billion gallons by 2015 and 36 billion gallons by 2022. This mandate requires that of the 36 billion gallons, 21 billion gallons must be advanced biofuels. Moreover, in February 2010, the U.S. Environmental Protection Agency revised the annual renewable fuel standard, or RFS2, in which, for the first time, it set annual volume requirements for specific categories of renewable fuels, such as cellulosic biofuels and biomass-based diesel. For example, 6.5 million gallons of liquid transportation fuels must come from cellulosic biofuels in 2010, a mandate that grows to three billion gallons of cellulosic biofuels in 2015 and 16 billion gallons of cellulosic biofuels in 2022, or approximately 15% and 44% of the total renewable fuel requirement under RFS2 in 2015 and 2022, respectively. In order to qualify for these new volume categories, fuel producers must demonstrate that their products meet certain minimum greenhouse gas reduction standards in comparison to the petroleum they displace. RFS2 also establishes a waiver credit for cellulosic biofuels of $1.56 per gallon for gasoline and diesel fuel refiners and importers that will not be able to meet their annual compliance obligations. This waiver credit will function as a per gallon penalty that is expected to encourage biofuel production.

The number of types of biofuels has grown over time. First generation biofuels manufacturers use biocatalysts to produce biofuels from food-based biomass and plant oils, such as ethanol and biodiesel. However, fuels produced from these sources do not provide an optimal solution to the petroleum dependence problem for a number of reasons, including:

- high exposure to rising commodity and energy prices;
- potential for increases in food and animal feed prices resulting from the diversion of food crops, such as corn and soybeans, to fuel production;
- ethical issues associated with diverting food crops and fertile acreage to fuel production; and
- only a modest reduction in carbon dioxide generation due to the energy inefficiency of producing biofuels from food crops.

Because of the limitations of first generation biofuels, many companies are now working to make fuels from cellulosic biomass rather than from food-based biomass. Cellulosic biomass is found in virtually all plant material, including sustainable non-food crops such as switch grass and wood chips, and agricultural plant wastes such as corn stover and sugar cane bagasse. Cellulosic biomass is comprised of, among other things, cellulose and hemicellulose, which are long chains of six and five carbon sugars, respectively, that are linked together. To access these sugars, biofuels producers typically utilize heat and

Table of Contents

chemicals to pretreat these cellulosic materials through a variety of processes that expose the hemicellulose and cellulose. Once exposed, these long chains can be broken down into individual sugar units which can be transformed into fuels.

While fuels produced from cellulosic biomass would represent significant advances over first generation biofuels, there have been several challenges in their development. These challenges include converting cellulose and hemicellulose into sugar, which is a more complicated process than converting corn starch and sugar cane into sugar. In addition, biomass sources vary greatly by plant species and geographic region. One of the challenges of advanced biofuels is developing a technology that can convert the great variety of biomass sources found throughout the world to fermentable sugars. Moreover, the yeast that are currently used to convert corn starch and sugar cane into ethanol typically are not capable of converting the different types of sugars that are produced from cellulosic biomass into ethanol. Solving these challenges will require cellulosic biofuels manufacturers to develop innovative, robust biocatalysts that will have greater product yield and be more cost-effective, and will react quickly and continually under industrial conditions. To date, no companies have successfully done this economically and at commercial scale.

Our Solutions for the Biofuels Market

We believe that our technology platform will enable the development of biocatalysts that can be used to produce commercially viable, cellulose-derived biofuel alternatives to petroleum-based fuels. Since 2006, we have been engaged with Shell in a research and development collaboration under which we are developing biocatalysts for use in producing advanced biofuels. Our advanced biofuels program focuses on two primary elements: (1) developing biocatalysts to convert cellulosic biomass into sugars; and (2) converting these sugars into two advanced biofuels, cellulosic ethanol and biohydrocarbon diesel. For the first element, we have used our technology platform to improve our cellulase and other biocatalysts. For the second element, we have developed a biocatalyst that converts sugars to diesel fuel, and are working on improving ethanol-producing yeast. We are using our technology platform to develop biocatalysts that we believe will:

- increase the rate at which cellulosic biomass is converted into biofuels;
- increase the yield of biofuels produced from cellulosic biomass;
- eliminate the need to use food resources for the production of biofuels;
- provide producers with more flexibility in designing processes to convert cellulosic biomass to biofuels, thereby reducing the costs associated with building and operating biofuel production facilities; and
- enable the production of new types of cellulosic biofuels that could be alternatives to petroleum-based fuels.

Under our research and development collaboration with Shell, Shell will have the right, but not the obligation, to commercialize any technology that we develop in our biofuels program. If Shell commercializes our biofuels technology, we will collect a royalty for every gallon of fuel that Shell produces using our technology. If Shell chooses to commercialize any biofuels products developed through our collaboration, we believe that the combination of our technology platform with Shell s proven product development capabilities and resources could enable a biofuels solution that extends from the conversion of cellulosic biomass into biofuels to delivery and distribution of refined biofuels to consumers at the pump.

Sugar Platform

As part of our biofuels research and development collaboration with Shell, we are using our technology platform to develop a suite of cellulases and other biocatalysts to convert cellulosic biomass to

Table of Contents

sugar, which we sometimes refer to as our sugar platform. One of the goals of our sugar platform is to improve the performance and operational range of cellulases and other biocatalysts so that they cost-effectively function in industrial conditions. For example, we have developed several of our cellulase biocatalysts that now function at temperature and acidity levels that we believe are close to commercial production targets. The benefit of increasing the operational range of the cellulases is to provide maximum flexibility in the design and function of the facility that is used to produce cellulose-derived sugars, thus decreasing the costs of production and lowering the cost of the end product to make it competitive with petroleum-based fuels.

Another goal of our sugar platform is to increase the rate and extent of conversion of cellulosic biomass to fermentable sugars. The more rapidly and efficiently that biocatalysts convert cellulose and hemicellulose to sugars, the less expensive the biomass conversion process will be to operate. We are developing our biocatalysts to produce more sugar per unit volume. For example, we have developed a biocatalyst that we believe produces twice as much sugar from cellulose as a leading commercially available product. We believe faster sugar production from our biocatalysts will lower capital costs and production costs and result in lower-cost sugar to convert to an end fuel product.

We are developing a library of cellulases that have the potential to convert a wide variety of cellulosic biomass sources into fermentable sugars. The cellulosic biomass that we expect will be used to produce advanced biofuels is highly variable from region to region and can change over time. To optimize the local and seasonal conversion of biomass to fermentable sugars, we expect to use technology similar to our Codex Biocatalyst Panel of cellulases that Shell can use to customize the biocatalysts that they use at each advanced biofuel production facility. This technical innovation may ultimately make our sugar platform feedstock agnostic. For example, based on our lab work, we believe that our cellulases have the potential to convert sugar cane bagasse or wheat straw to fermentable sugars. In addition, we licensed a commercial-scale enzyme production system from Dyadic in 2008 that we expect will enable the cost-effective production of the high-performing biocatalysts that we are developing for Shell. We believe that the combination of our high-performing cellulases and other biocatalysts, the feedstock flexibility that we expect our Codex Biocatalyst Panels will provide, plus the ability to produce these biocatalysts cost-effectively at commercial scale will enable us to develop a scalable, global sugar platform that will provide a competitive advantage in the advanced biofuels market.

Cellulosic Ethanol

The goal of our cellulosic ethanol program is to develop commercial yeast that rapidly produces high levels of ethanol from cellulose-derived sugars. Cellulosic biomass produces a mix of several types of sugars, including glucose, xylose and arabinose. Glucose is the main type of sugar in the mix and it is readily converted to ethanol by fermentation using commercial yeast. Xylose is another significant component of the mix but is not converted to ethanol by the yeast currently used in today s first generation ethanol production. Therefore, it is important to develop yeast that can rapidly convert not only glucose but also xylose and other sugars into ethanol. The yeast that is developed must be sufficiently robust so that it can produce ethanol in the presence of a variety of chemical compounds that have been shown to directly inhibit yeast.

Using a number of our core technologies, including whole genome shuffling and cellular engineering, we are working with a variety of active industrial and laboratory yeast strains to develop a yeast strain that rapidly converts more of these sugars to ethanol under a range of industrial conditions, which should result in greater ethanol production and lower capital and ethanol production costs. Based on this lab work, if the market opportunity presents itself, we believe that our technology platform can also be used to transform first generation yeast, which is currently used to convert sugars to ethanol at commercial scale.

Biohydrocarbon Diesel

We have made significant advancements in our biohydrocarbon diesel fuel program, which is focused on converting cellulose-derived sugar into a fungible diesel blending stock. We also believe that diesel fuel

Table of Contents

will be able to be produced from cane sugar using our biocatalysts. Based on our testing to date, our biocatalysts rapidly produce high quantities of fuel product per unit volume, which has the potential to reduce production costs and increase the efficiency and productivity of the biohydrocarbon manufacturing process. Our biohydrocarbon program has several additional advantages that could lower the production costs of diesel fuel. Our diesel-producing microbe secretes the diesel molecule from the cell, which then separates from the media in which the cell lives and grows. As a result, our production system can be run continuously without having to stop fuel production to harvest the fuel and purify the fuel product. We believe that many other comparable diesel-producing systems must isolate the fuel-producing cells, break-open the cells to release the fuel and purify the fuel from the resulting mixture, which significantly increase production costs for the end fuel product. In addition, we believe that the biohydrocarbon fuel product that we develop will be able to be blended directly into existing diesel fuel with little or no additional processing at a refinery, which would further lower production costs. In contrast, existing biodiesel fuels that are derived from plant oils must be chemically modified before they are suitable for use as diesel components. These chemical modifications involve processing steps before such fuel is ready for use, which adds to the cost of producing the fuel. In addition, other advanced biofuel programs aimed at producing diesel alternatives require extensive and difficult hydrogenation reactions, which are expensive and require capital intensive facilities that are not widely available.

In contrast to biodiesel produced from plant oils, we expect that the diesel fuel that we develop will be compatible with the existing transportation infrastructure, including distribution systems. A new fuel that works in existing engines and fuel production and distribution systems will not require additional investment in infrastructure to deploy this new technology. As discussed above, we believe that the diesel fuel that we develop will be capable of being blended in conventional petrochemical refineries that are widely used across the globe. This production flexibility should reduce structural barriers to adoption of the molecule as a wide-spread petroleum alternative.

Additional Bioindustrial Opportunities

We believe that our technology platform, together with the knowledge and experience gained from our efforts in the pharmaceutical market and in our biofuels development program, will allow us to capitalize on opportunities in other bioindustrial markets, including carbon management, water treatment and chemicals. Depending on the market, we may pursue collaborations with industry leaders to allow us to leverage their competitive strengths and resources in pursuit of these opportunities.

Carbon Management

From 1906 to 2005, global surface temperature increased 0.74 ± 0.18 degrees Celsius. In 2007, the Intergovernmental Panel on Climate Change concluded that most of this temperature increase was due to increasing concentrations of greenhouse gases, including carbon dioxide, which resulted from human activity. The consensus of the world scientific community is that continued climate change during this century will harm the global environment in unpredictable and potentially catastrophic ways. While a number of critics contest these conclusions, the global pressure to reduce carbon dioxide emissions is dramatic and increasing. Emissions continue to rise, even as the global demand for regulation grows. According to the EIA, the global emission level of carbon dioxide is projected to rise from 29 billion metric tons in 2006 to 33 billion metric tons in 2015 and 40 billion metric tons in 2030. Of the approximately seven billion tons of carbon dioxide equivalents emitted by the United States each year, approximately 40% is produced by the electric power industry. Furthermore, the share of global carbon dioxide emissions by the electric power industry could potentially increase in the future as growing demand for power increases alongside a growing population. By 2030, the EIA estimates, China and India will account for 34% of the world s carbon dioxide emissions, driven largely by their use of coal in generating electricity. The need for a viable method to manage these growing carbon dioxide emissions represents a significant opportunity.

Table of Contents

In the carbon management market, we are seeking to apply our technology platform to the management of carbon dioxide emissions from stationary point sources such as coal-fired power plants. As part of this effort, in December 2009, we entered into an exclusive joint development agreement with CO_2 Solution under which we will combine our biocatalyst-enabled technology platform with CO_2 Solution s proprietary enzymatic methods for the efficient capture of carbon dioxide from coal-fired power plants and other large sources of carbon dioxide emissions. We believe our biocatalysts have the potential to enhance the effectiveness of CO_2 Solution s carbon capture processes in harsh industrial conditions.

To further our efforts in the carbon management market, we have filed provisional patent applications relating to biocatalysts that we believe may optimize the process of removing carbon dioxide from flue gases. These biocatalysts improve the effectiveness of amine solvents, one of the leading potential technologies to remove carbon dioxide from flue gas. A major drawback of amine solvent technologies is the additional parasitic energy required to operate them. Based on initial models, we believe that our biocatalysts may reduce this parasitic energy loss by up to 35%. In the laboratory, these biocatalysts have also exhibited increased tolerance for flue stack-type operating conditions, though not yet at target commercial levels. Although our research is in its early stages, we believe that it may be possible to cost-effectively utilize biocatalyst-enabled solutions to separate carbon dioxide from other exhaust gases and direct them to separate sequestration mechanisms.

Water Treatment

Water treatment is another example of a potential major market opportunity for novel biocatalyst-enabled solutions. According to a United Nations study published in March 2007, approximately 80% of all diseases in the developing world are caused by unsafe water and poor sanitation. In addition, industrial manufacturing operations and municipal water usage generate large quantities of waste water, which must be treated in order to avoid contamination of our fresh water resources and our oceans. There are many sources and types of water pollution, and when different types of pollution mix together it presents complex and challenging remediation problems downstream.

The market for biocatalysts in water treatment is in a very early stage of development. However, new interest in biocatalyst-enabled solutions in water treatment has been sparked in part by concerns about possible contamination of drinking water from industrial and other sources. For example, a U.S. government report released in 2006 examined the potential of biocatalysts in the treatment of groundwater and drinking water in both civilian and military applications. The report concluded that biocatalyst- embedded water filters held significant promise for the treatment of agents, pesticides, or other chemical contaminants in drinking water systems, as well as for the decontamination of pipes and other equipment with contaminant residue. We believe that there are also opportunities for biocatalyst-enabled solutions to treat municipal wastewater streams.

Chemicals

There are also significant market opportunities in the chemical industry for companies that can help reduce or eliminate petroleum dependency, as well as costly and wasteful manufacturing processes. For example, according to the EIA, in 2008, approximately 214 million barrels of petroleum were used in petrochemical feedstocks.

We believe that fermentable sugars produced from cellulosic biomass may serve as an alternate source of carbon for use in the manufacture of many chemicals. This potential market may provide an opportunity to leverage our funded work with Shell into a separate business in the non-fuels chemicals industry. Our license agreement with Shell permits us to use technology developed for Shell outside of the field of fuels and lubricants. In addition, our technology platform could be applied to develop biocatalysts for the conversion of sugar or other feedstocks, rather than petroleum-derived hydrocarbons, into commercially

Table of Contents

important chemicals. We have rights to pursue a number of chemical market opportunities under our license agreement with Maxygen. To pursue certain other opportunities in the chemicals market, we will need to license additional rights from Maxygen.

Strategic Collaborations

Our strategic collaborations allow us to expand into new markets and to service our existing customers, while operating our business with maximum capital efficiency. By collaborating with companies such as Arch and Shell, we are able to leverage both our technology platform and our collaborators strengths in production and distribution. This allows us to focus our capital on key areas such as research and development.

Arch

We are collaborating with Arch Pharmalabs Limited, or Arch, of Mumbai, India in the manufacture and sale of certain specified APIs, and intermediates used in the manufacture of APIs, that are produced using biocatalysts that we supply to Arch. Arch has extensive expertise in chemical process development and scale-up, and is a leading producer of intermediates and generic APIs in India.

We were previously party to agreements with Arch pursuant to which Arch manufactured and supplied ATS-8 for us and on our behalf, and under which we paid Arch a percentage of the profits we earned on our sales of ATS-8. In August 2008, with the exception of the Master Services Agreement with Arch entered into as of August 1, 2006, we simultaneously terminated all of our existing agreements with Arch and entered into a series of new agreements with Arch, significantly expanding the relationship between the parties. In February 2010, we consolidated and modified certain of the contractual terms in our agreements with Arch by simultaneously terminating all of our existing agreements with Arch, other than the Master Services Agreement with Arch entered into as of August 1, 2006, and entering into two new agreements with Arch. These new agreements are a product supply agreement and an enzyme and product supply agreement, which we refer to as the Arch Agreements. Under the terms of the Arch Agreements, we supply certain biocatalysts to Arch for use in the manufacture of certain APIs, and intermediates used in the manufacture of APIs, all of which we refer to as the Collaboration Products. We granted Arch the exclusive right to use these biocatalysts to manufacture the Collaboration Products with certain specified exceptions. Arch agreed to manufacture and supply the Collaboration Products exclusively for us and on our behalf and we have agreed to purchase such Collaboration Products exclusively from Arch. Upon the occurrence of certain specified events, these exclusive rights may be converted to non-exclusive rights, including on a Collaboration Product-by-Collaboration Product basis, (1) for each Collaboration Product if, after two years, we determine that it is not commercially feasible to continue to supply biocatalysts for manufacture of such Collaboration Product and (2) for certain Collaboration Products if, after 18 months, Arch fails to make specified regulatory filings related to such product. Pursuant to the Arch Agreements, we have the exclusive right to sell the Collaboration Products to innovator pharmaceutical companies worldwide, generic pharmaceutical companies in the United States, Canada, Europe and Israel, and certain pharmaceutical companies in India. Arch has the exclusive right to manufacture, market and sell the Collaboration Products to generic pharmaceutical companies in countries other than the United States, Canada, Europe and Israel, and certain other pharmaceutical companies in India. Upon the occurrence of certain events, including the bankruptcy of our company, our failure to supply biocatalysts for the manufacture of a Collaboration Product or our determination that it is not commercially feasible to continue to supply biocatalysts for the manufacture of a Collaboration Product, Arch has an option to obtain the non-exclusive right, for a fee, under certain of our intellectual property rights to use and manufacture biocatalysts to manufacture and sell Collaboration Products to any third party.

The Arch Agreements will continue until February 2020 unless extended by mutual agreement or earlier terminated in accordance with their terms. Each party also has the right to terminate the Arch

Table of Contents

Agreements or convert the exclusive rights in the Arch Agreements to non-exclusive rights in their entirety or on a Collaboration Product-by-Collaboration Product basis in the case of certain material breaches by the other party.

We may to enter into additional agreements with Arch to manufacture additional intermediates and APIs, including the manufacture of products for innovator customers.

Shell and Other Biofuels Partners

We collaborate with Equilon Enterprises LLC dba Shell Oil Products US, or Shell, to develop commercially viable fuels from cellulosic biomass. If Shell chooses to commercialize any biofuels products developed through our collaboration, we believe that the combination of our technology platform with Shell s proven project development capabilities and resources could enable a biofuels solution, from converting cellulosic biomass into biofuels that extends to delivering and distributing refined biofuels to consumers at the pump.

Shell purchased approximately $3.0 million of our Series D preferred stock in November 2006, approximately $30.5 million of our Series E preferred stock in November 2007 and approximately $30.0 million of our Series F preferred stock in March 2009. In addition, in November 2007, Shell exercised a warrant issued in November 2006 to purchase 285,714 shares of our Series D preferred stock for $3.0 million.

In November 2006, we entered into a research agreement with Shell. After exceeding targets related to biocatalyst performance under the research agreement, we entered into a new research and development collaboration under a five year amended and restated collaborative research agreement in November 2007, which was amended further in March 2009 and February 2010. Under the terms of the amended and restated collaborative research agreement, we agreed to use our proprietary technology platform to discover and develop biocatalysts for use in converting cellulosic biomass into biofuels and related products. We received an up-front payment of $20 million in 2007 upon signing the amended and restated collaborative research agreement. We have agreed to work exclusively with Shell until November 2012 to convert cellulosic biomass into fermentable sugars that are used in the production of fuels and related products and to convert these sugars into fuels and related products. However, Shell is not required to work exclusively with us, and could develop or pursue alternative technologies that it decides to use for commercialization purposes instead of any technology developed under our collaborative research agreement with Shell. Even if Shell decides to commercialize products based on our technologies, they have no obligation to purchase their biocatalyst supply from us. The up-front fee is refundable under certain conditions, such as a change in control in which we are acquired by a competitor of Shell. This refundability lapses ratably on a straight-line basis over a five-year period which started in November 2007 and which ends in November 2012.

In March 2009, we agreed to devote to the research and development collaboration 128 FTEs, which are required to be funded by Shell at an annual base rate per FTE of $441,000 for FTEs located in the United States, and $350,000 for FTEs located in Hungary. These annual base rates per FTE are subject to annual adjustments based on changes in the CPI for the United States and Hungary for each subsequent year of the collaboration. Until November 1, 2010, Shell has the right to reduce the number of funded FTEs under the collaborative research agreement by up to 12 FTEs following 60 days advance written notice. After November 1, 2010, Shell has the right to further reduce the number of funded FTEs, with any one reduction not to exceed 98 funded FTEs, following advance written notice. The required notice period ranges from 30 to 270 days, so the earliest an FTE reduction could take place would be December 2, 2010. Following any such reduction, Shell is subject to a standstill period of between 90 and 360 days during which period Shell cannot provide notice of any further FTE reductions. The notice and standstill periods are dependent on the number of funded FTEs reduced, with the length of notice and standstill periods increasing commensurate with the number of FTEs reduced. To date, Shell has not reduced the number of funded FTEs. We are also eligible for annual milestone payments of up to an aggregate of $25.4 million over the remaining term of the agreement, contingent upon the achievement of certain

Table of Contents

technical goals beginning in 2009, and a milestone payment of $10.0 million upon achievement of certain commercial goals. Our technical goals have included filing patent applications relating to our development program, and matching predetermined benchmarks for the production of sugars from pre-treated cellulosic biomass using our cellulases and the production of a biohydrocarbon diesel component for sugar derived from cellulosic biomass. We have met or exceeded each of our milestones to date. We believe that several of our cellulase biocatalysts now function at temperatures and acidity levels that are close to the commercial targets. We also believe that our cellulase biocatalysts produce twice as much sugar from pre-treated cellulosic biomass as leading commercially available products under target industrial conditions.

Shell can terminate the amended and restated collaborative research agreement after November 1, 2010, for any or no reason by providing us with at least nine months notice. We will have the right to terminate the amended and restated collaborative research agreement upon 90 days notice if Shell decides to fund less than a certain number of our FTEs in the performance of activities under the amended and restated collaborative research agreement and provided certain other conditions are met. Each party also has the right to terminate the amended and restated collaborative research agreement in the case of a breach by the other party if such breach is uncured within 60 days. Each party also can terminate the amended and restated collaborative research agreement if such party believes the other party has assigned the amended and restated collaborative research agreement to a direct competitor of such party in the field of converting cellulosic biomass into fermentable sugars that can be converted into fuels and related products.

Under our agreements with Shell, we retain ownership of all intellectual property we develop, other than patent rights related to certain fuel innovations, and Shell will have an exclusive license to such intellectual property we develop. If we acquire or license technology from third parties for the purpose of these research activities, we will own or control such intellectual property while Shell will be granted a license in its field of use for research and commercial use consistent with the licenses granted to Shell, under the license agreements.

In November 2006, we also entered into a license agreement with Shell, which was amended and restated in November 2007, and further amended in March 2009. Under the terms of the amended and restated license agreement, we granted to Shell, a worldwide, exclusive, royalty-bearing license, including the right to grant sublicenses, to manufacture, have manufactured, use, sell, offer for sale and import any product covered by our patents or which utilizes our technology for use in the field of converting cellulosic biomass into biofuels and related products. The patents and technology licensed include our then existing patent rights and technology and patent rights and technology developed or acquired during performance of the research agreement, in each case related to converting cellulosic biomass into biofuels and related products. We additionally granted Shell royalty-free licenses which allow Shell to manufacture or have manufactured biocatalysts developed under the research agreement solely for the purposes of using such biocatalysts in the manufacture of products for use in the field of converting cellulosic biomass into biofuels and related products, such licenses to be used only in accordance with the royalty-bearing license described above. These royalty-free licenses are (i) an exclusive license under the patents and technology related to converting cellulosic biomass into biofuels and related products and developed or acquired by during performance of the research agreement and (ii) a non-exclusive license to patents and technology controlled by us that are necessary or useful for converting cellulosic biomass into biofuels and related products.

Shell will be required to pay us a royalty per gallon with respect to certain fuel products manufactured using our technology platform, including liquid fuels, fuel additives and lubricants, if Shell or any of its licensees manufactures such products. The applicable fuel products are those products which are covered by patents or utilize technology related to converting cellulosic biomass into biofuels and related products that were either developed or acquired during performance of the research agreement or are controlled by us and necessary or useful for such purpose. With respect to cellulosic biomass converted into sugars, Shell agreed to pay us a royalty per gallon of fuel product made from those sugars. With respect to sugars

Table of Contents

converted into fuel, Shell agreed to pay us a separate royalty per gallon of fuel product made from those sugars. We may be entitled to receive one or both of these royalties depending on whether Shell uses our technology to commercialize one or both of these steps.

Shell can terminate the amended and restated license agreement for any or no reason by providing us with six months notice. If Shell terminates the license agreement, Shell will no longer have the right to use any of our biofuels technology. Each party also has the right to terminate the amended and restated license agreement in the case of a breach by the other party if such breach is uncured within 60 days. The duration of the license agreement differs for each of the fields of use covered by the license agreement, but for each field of use it continues until the later of (i) 20 years after the first sale of product licensed under the agreement in the field of use or (ii) expiration of the last to expire patents covering products licensed under the agreement in the field of use that were either developed or acquired during performance of the research agreement or are controlled by us and necessary or useful for such purpose.

One element of our collaboration with Shell relates to the development of cellulosic ethanol. In connection with our collaboration with Shell, we entered into a collaborative research and license agreement with Iogen and Shell in July 2009. Under the collaborative research and license agreement with Iogen and Shell, we agreed to collaborate with Iogen and Shell to develop technology relating to the conversion of cellulosic biomass to ethanol and to implement this technology at commercial scale. We and Iogen will jointly own any inventions arising under the research activities pursuant to the collaborative research and license agreement, except that inventions relating to one party s core technology will be solely owned by that party and licensed to the other party. Inventions that we own under the collaborative research and license agreement are subject to the licenses granted by us to Shell, as well as the payments from Shell to us, under our other agreements with Shell. Iogen has agreed to pay us a royalty per gallon with respect to certain fuel products, which include liquid fuels, fuel additives and lubricants, that are covered by inventions jointly made by us and Iogen, but that are solely owned by Iogen. We will be entitled to collect royalties from Shell for any use of our biofuels technology by Shell or Iogen. Shell can choose to commercialize cellulosic ethanol manufactured using our technology independently, or in collaboration with Iogen.

The term of the collaborative research and license agreement with Iogen and Shell shall continue until expiration or termination of our license agreement with Shell or of Iogen s technology license agreement with Shell. Shell can terminate the collaborative research and license agreement for any or no reason by providing us and Iogen with 30 days notice. Each party also has the right to terminate the collaborative research and license agreement in the case of breach by another party if that breach is uncured within 60 days.

We have acquired access to a fungal expression system that is capable of producing biocatalysts at commercial scale through a license agreement with Dyadic International, Inc. and its affiliate, or Dyadic, in November 2008. Under the license agreement with Dyadic, we obtained a non-exclusive license relating to Dyadic s proprietary fungal expression technology for the production of biocatalysts. We also obtained access to specified materials of Dyadic relating to this Dyadic technology. Our license is sublicenseable to Shell in the field of biofuels. Each party agreed that neither it nor its affiliates or sublicensees will assert any claim of infringement of any patent covering improvements to the Dyadic materials that were made by that party or its affiliates or sublicensees against the other party, or its affiliates, sublicensees, successors, distributors, or customers. We agreed to pay Dyadic certain license issuance fees, milestone payments, and fees based on volume of product manufactured using this Dyadic technology. We have the right to terminate the license agreement at will upon notice after payment of the license issuance fees. Either party has the right to terminate the license agreement for a material breach of the other party that is uncured within a period of time after notice. Dyadic has the right to terminate our licenses under the license agreement if we challenge the validity of any of the patents licensed under the license agreement. Our licenses, and access to Dyadic s materials, under the license agreement will terminate as a result of any termination of the license agreement other than due to Dyadic s material breach.

Table of Contents

In February 2010, Shell International Petroleum Company Limited, or Shell International, an affiliate of Shell, announced that it had signed a non-binding memorandum of understanding with Cosan S.A., or Cosan, with the intention of forming a joint venture in Brazil for the production of ethanol, sugar and power, and the supply, distribution and retail of transportation fuels. Cosan is one of Brazil s leading producers of sugar and ethanol. According to the announcement, if the joint venture is consummated, Cosan would contribute to the joint venture its 23 sugar cane mills, its ethanol production capacity, up to 12 electricity co-generation plants, approximately 1,730 retail fuel service stations and its supply and distribution and ethanol logistics assets, a controlling share in an ethanol trading company, and net debt of approximately $2.5 billion. In addition, Shell International would contribute to the joint venture approximately 2,740 branded retail sites in Brazil, supply and distribution assets, its aviation fuel business in Brazil, Shell s equity interest in us, its equity interest in Iogen and $1.625 billion in cash. Shell International and Cosan announced that they will maintain exclusive negotiations towards a binding joint venture agreement, which shall be subject to final transaction documentation, due diligence, agreement between the two parties on sustainability issues, regulatory approvals and corporate approvals of both parties. We do not know what impact, if any, the proposed joint venture will have on our business.

Technology

We are innovators in the directed evolution of enzymes and microbes to enable industrial biocatalytic reactions and fermentations via biocatalyst engineering, metabolic pathway engineering and fermentation microbe improvement. Our technology platform has enabled commercially viable products and processes for the manufacture of pharmaceutical intermediates, and we are in the process of applying our technology platform in connection with the development of biofuels.

Our approach to developing commercially viable biocatalytic processes begins by conceptually designing the most economically practical manufacturing process for a targeted product. We then develop optimized biocatalysts to enable that process design, using our directed evolution technology, including screening and validating biocatalysts under relevant conditions. Typical design criteria include stability in the desired reaction conditions, biocatalyst activity and productivity (yield), ease of product isolation, product purity and cost. Alternative approaches to biocatalytic process development typically involve designing and engineering the biocatalytic processes around shortcomings of available biocatalysts, including, for example, biocatalyst immobilization (for stability and/or reuse), special equipment and costly product isolation and purification methods. We circumvent the need for these types of costly process design features by optimizing the biocatalyst for fitness in the desired process environment. As a result, we enable and develop cost-efficient processes that typically are relatively simple to run in conventional manufacturing equipment. This also allows for the efficient technical transfer of our process to our manufacturing partners.

The successful embodiment of our technology platform in commercial manufacturing processes requires well-integrated expertise in a number of technical disciplines. In addition to those directly involved in practicing our directed evolution technologies, such as molecular biology, enzymology, microbiology, cellular engineering, metabolic engineering, bioinformatics, biochemistry, and high throughput analytical chemistry, our process development projects also involve integrated expertise in organic chemistry, chemical process development, chemical engineering, fermentation process development, and fermentation engineering. Our tightly integrated, multi-disciplinary approach to biocatalyst and process development is a critical success factor for our company.

Enzyme Optimization Overview

The enzyme optimization process starts by identifying genes that code for enzymes known to have the general type of catalytic reactivity for a desired chemical reaction. Typically, we identify gene sequences in published databases and then synthesize candidate genes having those sequences. Using a variety of

Table of Contents

biotechnology tools, we diversify these genes by introducing mutations, giving rise to changes in the enzymes for which they encode. The methods for diversifying these genes, and types of diversity being tested, often vary over the course of a biocatalyst optimization program. For finding initial diversity, methods typically include random mutagenesis and site-directed (included structure-guided) mutagenesis. We also test mutational variations that distinguish related enzymes among different organisms. Once we have identified potentially beneficial mutations, we test combinations of these mutations in libraries made using our proprietary gene recombination methodologies, gene shuffling and multiplexed gene SOEing.

With our proprietary gene shuffling methodology, we generate libraries of genes that have random combinations of the mutations we are testing. The pool of genes is used to transform host cells, which entails introducing the various genes, one each, into host cells. These cells are then segregated and grown into colonies. Cells from individual colonies are cultured in high throughput to produce the enzyme encoded by the shuffled gene in those cells. The enzymes are then screened in high throughput using test conditions relevant to the desired process. The screening results identify individual shuffled genes that produce improved enzymes having combinations of beneficial mutations and weed out enzymes having detrimental ones. Using different test conditions and/or different analytical methods, we can identify variant enzymes that exhibit various improved performance characteristics, such as stability, activity and selectivity, under conditions relevant to the desired chemical process.

In the next step in our optimization process, we use our proprietary software tool, ProSAR, to analyze protein sequence-activity relationships. We initially licensed ProSAR from Maxygen and further developed and customized ProSAR to address our specific needs. ProSAR aids in identifying specific gene and enzyme mutations that are beneficial, neutral or detrimental with respect to the desired performance characteristics. Earlier directed evolution methods did not separately evaluate individual mutations in libraries of variants which carry multiple mutations, where beneficial and detrimental performance characteristics may be mixed in an individual gene or enzyme. Capitalizing on the advent of inexpensive gene sequencing, we are able to determine which particular mutations are present in the genes and proteins we have screened. Our ProSAR bioinformatics software relates the screening results to the mutations and ranks the individual mutations with regard to their degree of benefit or detriment, relative to whichever process parameter(s) the screening tested. Using that information, we can bias the pool of mutational diversity in the next iteration to further the accumulation of beneficial diversity and cancel out detrimental diversity in the individual genes in the resulting shuffled library. The ProSAR results also help us develop ideas about new diversity to test. ProSAR, combined with efficient gene synthesis and high quality library generation methods, has led to a significant increase in the efficiency and speed of enzyme improvement and optimization.

In another step of our optimization process, we take the best variants we have identified and prepare enough of each to test in the desired chemical process at laboratory scale, for in-process confirmation. This optimization routine is done iteratively, typically adding new diversity to the pool in each iteration. The gene that codes for the best performing enzyme in one iteration is used as the starting gene for the next iteration of shuffling and screening. As the enzymes improve over these iterations, the screening conditions are made increasingly more stringent. In this way, enzymes are rapidly optimized until all in-process performance requirements have been achieved and the economic objectives for the desired process have been met.

Mutiplexed gene SOEing is our new proprietary methodology for rapidly generating gene variants. Using multiplexed gene SOEing, we rapidly generate collections of individual gene variants that have predetermined, as opposed to random, combinations of mutations we are testing. It is based on a biotechnology technique, which we refer to as SOEing, or Splicing by Overlap Extension, generally used to make a hybrid, or spliced, gene from fragments of two genes and/or to introduce a specific mutation into a splice between fragments of one gene. We have automated the process to robotically make, in parallel, one

Table of Contents

hundred to several hundred variants, each with a predetermined combination of the mutations we are testing. The variants are introduced into host cells, and the encoded enzyme is produced and screened in high throughput, as described above.

Using multiplexed gene SOEing, we can test many mutations and combinations thereof in parallel, and because the mutation incorporation is controlled and predetermined before screening, as opposed to random incorporation and selection after screening, the resulting data set can be more optimal for ProSAR analysis.

We believe using multiplexed gene SOEing to quickly survey many mutations, followed by ProSAR-driven shuffling of beneficial mutations, is a particularly effective approach, providing rapid gains in enzyme performance.

Codex Biocatalyst Panels

Our Codex Biocatalyst Panels were initially developed to speed our own internal process for identifying enzymes with desired characteristics for further optimization. Each Codex Biocatalyst Panel is comprised of variants of one or more enzymes that catalyze one type of a generally useful chemical reaction. We assemble, on one or more microtiter sample plates, variants of a parent enzyme that we pre-optimize for stability in industrial chemical processes and for ready manufacturability. The variants are diversified to react to a variety of chemical structures that are susceptible to that type of chemical reaction.

Either we or our innovator pharmaceutical customers use the Codex Biocatalyst Panels to screen a new chemical structure against the assembled variants to rapidly identify variants that react with the new chemical structure. For some new structures, a variant on the panel could enable production of the desired product. We can also analyze the data from the panel screen using ProSAR to identify the mutations that are beneficial for the reaction of the new structure and further optimize the enzyme as needed using the enzyme optimization techniques described above. In cases where a customer wishes to screen a proprietary new chemical structure itself, we can produce a custom panel of new variants on a sample plate produced by multiplexed gene SOEing.

We may also use our Codex Biocatalyst Panels in our bioindustrial programs. In our biofuels research and development collaboration with Shell, we are developing a library of cellulases that have the potential to convert a wide variety of cellulosic biomass sources into fermentable sugars. The cellulosic biomass that we expect will be used to produce advanced biofuels is highly variable from region to region and can change over time. To optimize the local and seasonal conversion of cellulosic biomass to fermentable sugars, we expect to produce a Codex Biocatalyst Panel of cellulases that we or Shell can use to customize the biocatalysts that Shell uses at each advanced biofuel production facility. This technical innovation may ultimately make our sugar platform feedstock agnostic. Similarly, there is regional variation in coal. We may develop a Codex Biocatalyst Panel that we or our customers can use to tailor our carbon capture biocatalysts to the specific characteristics of the coal used in each energy facility that adopts our carbon capture technology.

Microbe Optimization using Gene Optimization

For fermentation microbes, we enhance metabolic pathways by using gene optimization to improve the production and/or productivity of one or more enzymes in a series of *in vivo* reactions that make a desired product. We optimize the gene/enzyme as described above using either *in vitro* or *in vivo* screening. For fermentation applications, the microbes containing the improved gene(s) are directly evaluated in laboratory scale fermenters.

The metabolic pathway may naturally exist in the microbe, but productivity and/or selectivity improvements are needed to economically produce more of the desired natural product and/or less of an undesired by-product. We can also introduce a new metabolic pathway to produce a desired product using our gene shuffling technology in combination with synthetic biology, a type of metabolic engineering in which new genes are introduced into a microbe.

Table of Contents

We are using our gene/enzyme optimization methodologies in our biofuels program to optimize fermentation microbes, including optimization of:

- native and introduced (non-native) cellulase genes for increased productivity in our cellulase production microbes;
- an introduced (non-native) pathway in yeast for the conversion of xylose, a cellulose-derived sugar, to ethanol; and
- an introduced (non-native) pathway in a microbe for the production of our biohydrocarbon fuel molecule.

Microbe Optimization using Whole Genome Shuffling

In addition to our gene optimization technology for enzymes, we have another complimentary technology in our platform for the optimization of fermentation microbes called Whole Genome Shuffling. Whole Genome Shuffling allows us to improve the performance of a fermentation microbe by shuffling unidentified mutations in unidentified genes across the genome. We start with a diversity of mutational variants of a fermentation organism, generated by conventional means such as random mutagenesis. Our Whole Genome Shuffling involves introducing the entire genome of two or more such cells into a single cell, in which the genetic machinery of the combined cell recombines, or shuffles, the genomes. In one method, this is accomplished by protoplast fusion, in which the cell walls are removed to leave the cells contents contained only by their cell membranes. The cell membranes of these protoplasts in the diverse population are induced to fuse together into fusants containing the genome of two or more of the parent cells. From these fusants, we regenerate normal cells, each with one copy of a hybridized genome. Microbial colonies are then grown and screened for their performance in the fermentative production of the desired product. This process can be repeated, including with the introduction of new mutations, until the desired performance in the fermentation process is achieved. One of our collaborators is operating a fermentation process for a generic pharmaceutical product using microbes we developed by Whole Genome Shuffling.

We are using our Whole Genome Shuffling technology in our biofuels program to optimize fermentation microbes, including optimization of:

- enzyme production hosts for increased production of cellulase enzymes;
- ethanol-producing yeasts for improved xylose utilization, ethanol productivity, and tolerance to higher ethanol concentrations; and
- our biohydrocarbon producing strain for increased productivity.

Metabolic Engineering and Synthetic Biology

In addition to our proprietary enzyme and microbe optimization technologies, we have built expert capabilities in a suite of new metabolic engineering technologies for the development and optimization of fermentation microbes. These technologies are generally applicable to our pathway and strain engineering programs. Genomics, transcriptomics, proteomics and metabolomics all provide more in-depth analyses of the metabolic functioning of fermentation microbes, and differences between variants, to guide further improvements. In many cases, these analyses help to identify enzymes that need to be modified (removed, increased, stabilized, or otherwise modified) in order to increase the overall productivity and performance of the strain.

Synthetic biology involves the design, synthesis and introduction of new genetic programming to organisms for new biological functions. This field has rapidly developed in recent years as DNA synthesis and sequencing costs have rapidly dropped. Using synthetic biology, we are taking advantage of the

Table of Contents

exploding publicly available gene and genome sequence information in our gene and metabolic pathway optimization projects. This information is being leveraged by our ProSAR software and multiplexed gene SOEing methodologies. For example, we use synthetic biology in our biofuels program to introduce non-native pathways for xylose utilization and for biohydrocarbon production and to optimize these pathways.

License Agreement with Maxygen

In March 2002, we licensed from Maxygen core enabling technology. The license agreement was amended in September 2002, October 2002 and August 2006.

Under the terms of this license agreement, Maxygen granted us a worldwide, exclusive, license, with a right to sublicense, under certain Maxygen intellectual property related to the use of shuffling technology in a variety of fields of use. This license includes the right to develop, make, have made, use, import, have imported, offer for sale, sell, otherwise commercialize or distribute biocatalysts for the manufacture of generic and branded pharmaceuticals, certain classes of chemicals and certain applications related to energy and biofuels. Under the license agreement, Maxygen also provided us with certain biological materials to facilitate use of the gene shuffling technology. We can use the licensed Maxygen shuffling technology in a wide variety of organisms including algae, bacteria, cyanobacteria, fungi and yeasts, but we are restricted from using the technology in land plants. Our license is exclusive with respect to bacteria, yeast and fungi, but is nonexclusive with respect to algae and cyanobacteria. The Maxygen license extends for the lifetime of the patents included in the Maxygen intellectual property plus an additional 50 years for any know-how or materials included in the license agreement, unless earlier terminated.

The license agreement also specifically excludes us from certain activities. Under the terms of this license agreement, our license is subject to certain third-party rights in the Maxygen shuffling technology and we cannot utilize the licensed Maxygen shuffling technology for drug discovery or for the manufacture of protein-based therapeutics, such as antibodies.

Under the terms of our license agreement with Maxygen, we are obligated to pay Maxygen a significant portion of certain types of consideration we receive in connection with our biofuels research and development, including our collaboration with Shell. The actual fees payable to Maxygen will depend on the amount, timing and type of consideration we receive, including payments from the sale of our equity securities to Shell and payments in connection with the sale of fuel products made with a biocatalyst developed using the licensed technology and/or research and development activities.

If we directly commercialize an energy product that is made using any biocatalyst developed from the technology licensed from Maxygen, we will owe Maxygen a 2% royalty on our net sales of the energy product and on amounts received from any sublicensee or third party for the use of the energy product, to the extent that we utilize such energy product to provide services to such sublicensee or third party. If we sublicense our rights under the license agreement to a third party for the development and commercialization of an energy product, we will owe Maxygen 20% of all consideration we receive from any sublicensee. Specifically, we will owe Maxygen fees in connection with consideration we receive in the form of (1) up-front option and/or license fees, (2) FTE funding for biofuels research, (3) milestone payments, (4) payments from the sale of our equity securities and (5) payments in connection with the commercialization of energy products made with a biocatalyst developed using the licensed technology.

In the case of consideration received from the sale of our equity securities to Shell, we are obligated to pay Maxygen 20% of any excess paid above $5.96 per share, the price per share of our Series D preferred stock. With regard to FTE funding, we are only obligated to pay Maxygen 20% of the portion of any consideration received in excess of a specified amount, which was initially $350,000 per year starting in September 2006, but is adjusted annually based on the published CPI for the United States. We are also obligated to reimburse up to 20% of the costs incurred by Maxygen related to the prosecution and

Table of Contents

maintenance of the patents licensed from Maxygen relating to our core technology. Further, in the event that any subsidiary or affiliate of ours develops and/or sells any energy applications using the Maxygen technology, we are obligated to transfer to Maxygen a percentage of the value of the subsidiary or affiliate that is attributable to the Maxygen technology and give Maxygen an option to acquire a percentage of the other consideration that we invest in such affiliate or subsidiary.

In connection with all consideration received from Shell relating to our biofuels research and development collaboration, we were obligated to pay Maxygen $7.9 million, $0.9 million and $5.5 million for 2007, 2008, and 2009 respectively, of which $0, $0.9 million, and $1.4 million respectively, were payments owed to Maxygen in connection with Shell s FTE funding. The payments relating to FTE funding were less than 5% of the total FTE payments we received from Shell in those periods.

Maxygen granted Novo Nordisk A/S certain rights under its intellectual property on September 17, 1997. This grant was later amended and these rights were later assigned by Novo Nordisk to Novozymes A/S and by Maxygen to us. Under this license, Maxygen granted exclusive rights to Novozymes that are outside the field of use licensed to us by Maxygen. Maxygen also granted certain rights to Novozymes co-exclusively in other fields that could overlap with certain fields we are pursuing under our license, including biofuels. At a minimum, we enjoy co-exclusive rights in such fields and have sufficient rights for our collaborations and partnerships. Novozymes did not receive a license to all of the rights we are using in biofuels applications and which we believe are critical to pursuing such applications.

In exchange for this license, we issued a total of 666,000 shares of common stock and four million shares of Series A preferred stock to Maxygen. As of February 28, 2010, Maxygen beneficially owned approximately 21.4% of our common stock.

Intellectual Property

Our success depends in large part on our proprietary products and technology under which we seek protection from patent, copyright, trademark and trade secret laws. Such protection is also maintained using confidential disclosure agreements. Protection of our technologies is important for us to offer our customers and partners proprietary services and products unavailable from our competitors, and to exclude our competitors from practicing technology that we have developed or exclusively licensed from other parties. For example, our ability to supply innovator pharmaceutical manufacturers depends on our ability to supply proprietary enzymes or methods for making pharmaceutical intermediates or APIs that are not available from our competitors. Likewise, in the generic pharmaceutical area, proprietary protection, through patent, trade secret or other protection of our biocatalysts and methods of producing a pharmaceutical product is important for us and our customers to maintain a lower cost production advantage over competitors. If competitors in our industry have access to the same technology, our competitive position may be adversely affected. As of December 31, 2009, we owned or had licensed rights to approximately 235 issued patents and approximately 280 pending patent applications in the United States and in various foreign jurisdictions. The earliest that any of our intellectual property rights will expire is 2014. Of the licensed patents and patent applications, most are owned by Maxygen and exclusively licensed to us for use in certain fields. These licensed patents and patent applications cover both enabling technologies, as well as products or methods of producing products. Our licenses to such patents allow us to freely practice the licensed inventions, subject only to the terms of these licenses. The issued patents covering the fundamental shuffling technologies have terms ending as late as 2019. As of December 31, 2009, we owned approximately 35 issued patents and approximately 115 pending patent applications in the United States and in various foreign jurisdictions. These patents and patent applications are directed to our enabling technologies and specific methods and products which support our business in the pharmaceutical and bioindustrial markets. In particular, some of our patents and patent applications are directed to intermediates and processes for the production of pharmaceuticals such as atorvastatin, montelukast and azetidinone compounds. Our U.S. intellectual property rights directed to our enabling

Table of Contents

technologies have terms that expire from year 2021 to 2024. We continue to file new patent applications, for which terms generally extend 20 years from the filing date in the United States.

We will continue to file and prosecute patent applications and maintain trade secrets as is consistent with our business plan in an ongoing effort to protect our intellectual property. It is possible that our current patents, or patents which we may later acquire, may be successfully challenged or invalidated in whole or in part. It is also possible that we may not obtain issued patents from our pending patent applications or other inventions we seek to protect. We sometimes permit certain intellectual property to lapse or go abandoned under appropriate circumstances. Due to uncertainties inherent in prosecuting patent applications, sometimes patent applications are rejected and we subsequently abandon them. It is also possible that we may develop proprietary products or technologies in the future that are not patentable or that the patents of others will limit or altogether preclude our ability to do business. In addition, any patent issued to us may provide us with little or no competitive advantage, in which case we may abandon such patent or license it to another entity.

Our registered and pending U.S. trademarks include Codexis, Codex and Codex Biocatalyst Panel. The Codexis and Codexis design marks have been registered or are pending in selected foreign countries.

Our means of protecting our proprietary rights may not be adequate and our competitors may independently develop technology or products that are similar to ours or that compete with ours. Patent, trademark, and trade secret laws afford only limited protection for our technology platform and products. The laws of many countries do not protect our proprietary rights to as great an extent as do the laws of the United States. Despite our efforts to protect our proprietary rights, unauthorized parties have in the past attempted, and may in the future attempt, to operate under aspects of our intellectual property or products or to obtain and use information that we regard as proprietary. Third parties may also design around our proprietary rights, which may render our protected technology and products less valuable, if the design around is favorably received in the marketplace. In addition, if any of our products or technology is covered by third-party patents or other intellectual property rights, we could be subject to various legal actions. We cannot assure you that our technology platform and products do not infringe patents held by others or that they will not in the future.

Litigation may be necessary to enforce our intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement, invalidity, misappropriation, or other claims. Any such litigation could result in substantial costs and diversion of our resources. Moreover, any settlement of or adverse judgment resulting from such litigation could require us to obtain a license to continue to make, use or sell the products or technology that is the subject of the claim, or otherwise restrict or prohibit our use of the technology.

Competition

Overview

We are a leader in the field of directed molecular evolution of biocatalysts. We are aware that other companies, including Verenium Corporation (formed by the merger of Diversa Corporation and Celunol Corporation), Royal DSM N.V., or DSM, Danisco/Genencor, Novozymes, and E.I. DuPont De Nemours and Company, or DuPont, have alternative methods for obtaining and generating genetic diversity or use mutagenesis techniques to produce genetic diversity. Academic institutions such as the California Institute of Technology, the Max Planck Institute and the Center for Fundamental and Applied Molecular Evolution (FAME), a jointly sponsored initiative between Emory University and Georgia Institute of Technology, are also working in this field. This field is highly competitive and companies and academic and research institutions are actively seeking to develop technologies that could be competitive with our technologies.

We are aware that other companies, organizations and persons have described technologies that appear to have some similarities to our patented proprietary technologies. In addition, academic institutions

Table of Contents

are also working in this field. Technological developments by others may result in our products and technologies, as well as products developed by our customers using our biocatalysts, becoming obsolete. We monitor publications and patents that relate to directed molecular evolution to be aware of developments in the field and evaluate appropriate courses of action in relation to these developments.

Many of our competitors have substantially greater manufacturing, financial, research and development, personnel and marketing resources than we do. In addition, certain of our competitors may also benefit from local government subsidies and other incentives that are not available to us. As a result, our competitors may be able to develop competing and/or superior technologies and processes, and compete more aggressively and sustain that competition over a longer period of time than we could. Our technologies and products may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of our competitors. As more companies develop new intellectual property in our markets, the possibility of a competitor acquiring patent or other rights that may limit our products or potential products increases, which could lead to litigation.

We also face differing forms of competition in our various markets, as set forth below:

Pharmaceuticals

Our primary competitors in the pharmaceutical market are companies using conventional, non-biocatalytic processes to manufacture pharmaceutical intermediates and APIs that compete in the marketplace with our biocatalytically manufactured products. The principal methods of competition and competitive differentiation in this market are product quality and performance, including manufacturing yield and safety and environmental benefits, speed of delivery of product and price. The market for the manufacture and supply of APIs and intermediates is large with many established players. These companies include many of our large innovator and generic pharmaceutical customers, such as Merck, Pfizer, and Teva, who have significant internal research and development efforts directed at developing processes to manufacture APIs and intermediates. The processes used by these companies include classical conventional organic chemistry reactions, chemo catalysis reactions catalyzed by chemical catalysts, or biocatalytic routes using commercially available enzymes, or combinations thereof. Our manufacturing processes must compete with these internally developed routes. Additionally, there are many large well-established fine chemical manufacturing companies that compete to supply pharmaceutical intermediate and APIs to our customers, such as DSM, BASF Corporation and Lonza Group Ltd. Finally, we face increasing competition from generic pharmaceutical manufacturers in low cost centers such as India and China.

In addition to competition from companies manufacturing intermediates and APIs, we face competition from companies that sell biocatalysts for use in the pharmaceutical market. The market for supplying biocatalysts for use in pharmaceutical manufacturing is quite fragmented. There is competition from large industrial enzyme companies, such as Novozymes and Amano Enzyme Inc., whose industrial enzymes (for detergents, for example) are occasionally used in pharmaceutical processes. There is also competition in this area from several small European companies with relatively limited product offerings comprised primarily of naturally occurring biocatalysts. In addition to these biocatalyst supply companies, there is a separate group of small companies, also predominately in Europe, that offers biocatalyst optimization services.

We believe that our principal advantage is our ability to rapidly deliver customized biocatalyst products for existing and new intermediates and APIs in the pharmaceuticals market. This capability has allowed us to create a breadth of product offerings with improved performance characteristics including, for example, activity, stability, and activity on a range of substrates, compared to traditional chemistry-based manufacturing processes and naturally occurring biocatalysts. We believe that our directed evolution technology provides substantially superior results, in shorter time frames, than companies offering competing biocatalyst development services.

Table of Contents

Bioindustrials

There is increasing interest and activity in the bioindustrial market directed towards developing alternative manufacturing processes for products that have traditionally been derived from fossil fuel sources, such as transportation fuels and chemicals.

Currently, most biofuels being produced at commercial scale are ethanol derived from sugar and starch food sources, such as sugar cane and corn, and biodiesel produced from vegetable oils, such as soy oil. These markets are well-established with multiple companies, such as The Archer Daniels Midland Company, Cargill and a number of smaller companies producing ethanol in the United States.

Many established and several recently formed companies are developing biofuels technology and have forged relationships or ventures to develop and commercialize their technologies, including:

- Novozymes, 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/Genencor, which has formed a joint venture with DuPont, called DuPont Danisco Cellulosic Ethanol, or DDCE, is marketing a line of cellulases to convert biomass into sugar;
- DSM, which received a grant from the U.S. Department of Energy to be the lead partner in a technical consortium including Abengoa Bioenergy New Technologies, is developing cost-effective enzyme technologies;
- Mascoma Corporation has entered into a feedstock processing and lignin supply agreement with Chevron Technology Ventures, a division of Chevron U.S.A., Inc.; and
- Verenium, which has entered into a research and development collaboration with BP, p.l.c and formed a joint venture with BP called Vercipia Biofuels to develop a commercial scale cellulosic ethanol facility.

Although no company is currently converting cellulosic biomass into fermentable sugars at commercial scale, many of our competitors have been active in this area for many years, have invested significant resources in this effort, and have extensive patent portfolios regarding the relevant biocatalysts and related processes. In addition, several companies are focused on developing non-biocatalytic, thermochemical processes to convert cellulosic biomass into fermentable sugars. Our routes from cellulosic biomass to fermentable sugars will need to be cost-competitive with all of these alternative sources and routes. There are also many companies active in the area of producing non-ethanol biofuels from fermentable sugars. For example, DuPont has announced plans to develop and market biobutanol through Butamax, a joint venture with BP, while other companies such as Amyris Biotechnologies Inc., or Amyris, Gevo Inc. and LS9, Inc. are working on biocatalytic routes to non-ethanol biofuel alternatives to petroleum-based fuels. Virent Energy Systems and Shell also have a joint collaboration to develop theromochemical catalytic routes to biogasoline directly from sugars. 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. New companies are being founded in this area at an increasing rate. Many of these companies are actively developing and applying for intellectual property rights, including patent rights, in this space.

Our ability to remain competitive in this area will depend on our ongoing technical success in identifying and developing novel biocatalytic routes to fuel products that are cost-competitive not only with other biofuels but with petroleum-based fuels. Several of our competitors, including Amyris, utilize synthetic biology techniques to develop their products. Because these techniques have been in the public domain for many years, we are able to use these techniques together with our gene and genome directed

Table of Contents

evolution technologies. We believe that one of our principal advantages, particularly in the bioindustrial space, is that our directed evolution technology may enable us to develop new, more efficient, and therefore more cost-effective, biocatalysts and processes in less time than our competitors.

As we pursue opportunities in other bioindustrial markets, we expect to face competition from numerous companies focusing on developing biocatalytic and other solutions for these markets, including a number of the companies described above.

Operations

We conduct substantial operations outside of the United States. Please see Note 17 of our consolidated financial statements appearing elsewhere in this prospectus for a description of our revenues and long-lived assets outside of the United States. We have facilities located throughout the world, including in Redwood City, California, Singapore, and Budapest, Hungary. As of December 31, 2009, we employed 290 people worldwide, with 203 of our employees located in Redwood City.

Our corporate headquarters is located in Redwood City and provides general administrative support to our business and is the center of our manufacturing and research and development operations. In 2007, we established a research and development facility in Singapore to reduce our pharmaceutical research and development costs and to take advantage of the highly educated and skilled labor force in Singapore. In 2008, we established our facilities in Budapest, Hungary to create a research and development center for microbial biocatalyst improvement and fermentation development and to reduce our research and development costs. Hungary also has a highly educated and skilled work force that leverages the long history of fermentation development in Eastern Europe. Our facilities in Hungary are currently used exclusively for biofuels research and development.

Our research and development operations include efforts directed towards biocatalyst evolution, bioprocess development, cellular engineering, biocatalyst screening, metabolites, strain improvement, fermentation development and process engineering. We conduct enzyme evolution, enzyme production development, microbial bioprocess development, cellular engineering, microbial evolution and process engineering evaluations and design primarily at our headquarters in Redwood City. We also conduct biocatalyst evolution, biocatalyst screening and bioprocess development in Singapore. Our facility in Hungary collaborates with our headquarters in Redwood City in research and development activities relating to microbe improvement and is our center of excellence for strain and fermentation development. For more information on our research and development expenses, including expenses funded by our collaborative partners, see Management s Discussion and Analysis of Financial Condition and Results of Operations Revenues and Operating Expenses Research and Development Expenses included elsewhere in this prospectus.

We have limited internal manufacturing capacity at our headquarters in Redwood City. We expect to rely on third-party manufacturers for commercial production of our biocatalysts for the foreseeable future. Our in-house manufacturing is dedicated to producing both our Codex Biocatalyst Panels and biocatalysts for use by our customers in pilot scale production. We also supply initial commercial quantities of biocatalysts for use by our collaborators to produce pharmaceutical intermediates and manufacture biocatalysts that we sell.

We rely on two primary contract manufacturers, CPC Biotech srl, or CPC, and Lactosan GmbH & Co. KG, or Lactosan, to manufacture all of the commercial enzymes used in our pharmaceutical business. We have qualified other contract manufacturers to manufacture biocatalysts for our pharmaceutical business, but we do not currently rely on them for any of our supply requirements. We also rely on Arch, headquartered in Mumbai, India, to manufacture certain of our pharmaceutical intermediates and APIs as well as to provide sales and marketing support for these products in Asia, Latin America and the Middle East, and marketing support for these products in India, the United States, Canada, Europe and Israel. In addition, we contract with other suppliers in Austria, Germany, Italy and India.

Table of Contents

We continue to evaluate whether to develop internal capabilities to manufacture biocatalysts at commercial scale. To increase our biocatalyst manufacturing capacity, we may invest in our own manufacturing capabilities through the construction of additional manufacturing facilities. The factors we will consider in deciding whether to expand our internal manufacturing capabilities include the costs associated with developing and maintaining such capabilities, the time required to develop such capabilities, potential locations for manufacturing sites, including proximity to existing customers, taxes associated with manufacturing activities and local incentives.

Facilities

Our headquarters is located in Redwood City, where we occupy approximately 87,000 square feet of office and laboratory space. The term of the lease expires in January 2011 for one part of our facilities, in April 2012 for another part and March 2013 for the third part. We have one option to extend the lease for an additional term of five years for each part, provided that we provide notice to the landlord at least nine months prior to the expiration of the initial term of the lease for each part. We believe that the facilities that we currently lease are adequate for our needs for the immediate future and that, should it be needed, additional space can be leased to accommodate any future growth.

In Singapore, we occupy approximately 1,900 square meters of office and laboratory space within Singapore Science Park II. The term of the lease expires in July 2010. We have an option to extend the lease for an additional term of three years. We believe that the facilities that we currently lease in Singapore are adequate for our needs for the immediate future and that, should it be needed, additional space can be leased to accommodate any future growth.

In Hungary, we occupy approximately 900 square meters of office and laboratory space. The term of the lease expires in July 2013. We have an option to extend the lease for an additional term of five years. We believe that the facilities that we currently lease are adequate for our needs for the immediate future and that, should it be needed, additional space can be leased to accommodate any future growth.

Employees

As of December 31, 2009, we had 290 employees. Of these employees, 181 were engaged in research and development, 44 were engaged in manufacturing and operations, and 65 were engaged in general and administrative activities, respectively. We plan to continue to expand our research and development activities. To support this growth, we will need to expand managerial, research and development, operations, finance and other functions. None of our employees are represented by a labor union, and we consider our employee relations to be good.

Legal Proceedings

We are not currently a party to any material litigation or other material legal proceedings.

Table of Contents

MANAGEMENT

Executive Officers, Key Employees and Directors

The following table sets forth certain information about our executive officers, key employees and directors, as of February 1, 2010.

Name	Age	Position
Executive Officers		
Alan Shaw	46	President and Chief Executive Officer, Director
Robert J. Lawson	45	Senior Vice President and Chief Financial Officer
David L. Anton	56	Senior Vice President, Research and Development
Joseph J. Sarret	42	Chief Business Officer and President, Pharmaceutical Services and Enzyme Products
Douglas T. Sheehy	43	Senior Vice President, General Counsel and Secretary
Key Employees		
John H. Grate	57	Senior Vice President, Science and Innovation and Chief Science Officer
Michael J. Knauf	51	Vice President and General Manager, Bioindustrials
Directors		
Thomas R. Baruch(1) (2) (3)	71	Chairman, Board of Directors
Alexander A. Karsner	42	Director
Bernard J. Kelley(1) (2)	68	Director
Bruce Pasternack(1) (3)	62	Director
Chris Streng	43	Director
James R. Sulat	59	Director
Dennis P. Wolf(2) (3)	57	Director
Mun Yew Wong	38	Director

(1) Member of the Compensation Committee.

(2) Member of the Audit Committee.

(3) Member of the Nominating and Corporate Governance Committee.

Alan Shaw, Ph.D., has served as President of Codexis since its inception and Chief Executive Officer since 2002. As our President and Chief Executive Officer, Mr. Shaw brings an understanding of our business and operations to our board of directors, of which he has been a member since 2002. Prior to Codexis, Dr. Shaw was Head of New Business Development for Clariant and Managing Director for Lancaster Synthesis and prior to Clariant s acquisition of BTP plc, Chief Operating Officer of Archimica, the pharmaceutical chemicals division of BTP plc. From 1994 to 1999, he was with Chiroscience Group plc, most recently as Managing Director of the pharmaceutical services unit, Chirotech Technology Limited, and a member of the board of directors of Chiroscience Ltd. Earlier in his career, Dr. Shaw held various scientific and management positions for over 15 years at Imperial Chemical Industries PLC (ICI)/Zeneca. Dr. Shaw serves on the boards of directors of CO_2 Solution Inc. and BIO, the biotechnology industry trade association, and is chair of the BIO Industrial and Environmental Section. He holds a B.S. in chemistry from Teesside University, England and a Ph.D. in chemistry from the University of Durham, England. Dr. Shaw is a Fellow of the Royal Society of Chemistry (FRSC, C.Chem.) and the Chartered Institute of Marketing (FCIM, Chartered Marketer).

Table of Contents

Robert J. Lawson has served as Senior Vice President and Chief Financial Officer since November 2009. Prior to joining Codexis, Mr. Lawson was most recently Vice President, Finance-Consumer Group of Intuit. While at Intuit from 2001 to November 2009, Mr. Lawson held various senior financial management positions, including Vice President, Investor Relations and Financial Planning and Analysis and Vice President, Finance-Small Business and Personal Finance. Prior to Intuit, Mr. Lawson served for 15 years in various financial management roles at General Electric. He holds a B.S. in business from Iowa State University.

David L. Anton, Ph.D., has served as Senior Vice President, Research and Development since May 2009. He joined Codexis in March 2008 as Vice President, Research and Development, for Codexis Bioindustrials. Dr. Anton has over 25 years experience directing development of new technology solutions and production processes. He joined DuPont in 1983, and held a variety of senior research management positions across bioprocessing and biocatalysis. He holds a B.S. in biochemistry from the University of California, Berkeley, and a Ph.D. in biochemistry from the University of Minnesota.

Joseph J. Sarret, M.D., J.D., has served as Chief Business Officer and President, Pharmaceutical Services and Enzyme Products since October 2009. He joined Codexis in 2005 as Corporate Counsel and Director, Business Development and was promoted to Vice President, Corporate Development in 2007 and Senior Vice President, Corporate Development in February 2009. Previously, he was an associate at Latham & Watkins LLP. He also served as attending physician and later Acting Medical Director for the HIV Clinic at the University of California, San Francisco Medical Center. Dr. Sarret is a graduate of both the University of California, San Francisco School of Medicine and Stanford Law School. He holds a B.A. in human biology from Stanford University, where he graduated Phi Beta Kappa.

Douglas T. Sheehy has served as Senior Vice President, General Counsel and Secretary of Codexis since November 2009. He joined Codexis in April 2007 as Vice President, General Counsel and Secretary. Prior to Codexis, Mr. Sheehy spent five years at CV Therapeutics, Inc. in various positions, most recently as Executive Director, Legal Corporate Law. Prior to that, Mr. Sheehy served as an attorney with the law firms of Gunderson Dettmer LLP and Brobeck Phleger & Harrison LLP. Mr. Sheehy holds a B.A. in history from Dartmouth College and a J.D. from American University.

John H. Grate, Ph.D., has served as Chief Science Officer and Senior Vice President, Science and Innovation since May 2009. From December 2007 to May 2009, Dr. Grate served as Chief Technology Officer and Senior Vice President, Technology and Innovation of Codexis. From July 2005 to December 2007, Dr. Grate served as Senior Vice President, Research and Development, and Chief Technology Officer of Codexis, and from September 2002 to July 2005, Dr. Grate served as Vice President, Research and Development and Chief Technology Officer. Prior to his employment with Codexis, Dr. Grate was an independent consultant and a member of Codexis Industrial Advisory Board. Previously, Dr. Grate held various research and development leadership positions in his 20 years at Catalytica, Inc. He was founding Vice President of Research and Development for the subsidiary, Catalytica Pharmaceuticals, Inc., until its acquisition by Royal DSM N.V. in early 2001. Dr. Grate is a registered U.S. Patent Agent. He holds a B.S. in chemistry from Miami University (Ohio) and a Ph.D. in chemistry from the University of California, San Diego.

Michael J. Knauf has served as Vice President and General Manager, Bioindustrials since April 2007. He joined Codexis from Lallemand Specialties, where he was General Manager of the Ethanol Technology business unit from June 2005 to March 2007. Previously, he served for nearly 20 years with Genencor, where he rose to Director and Industry Manager for Fermentation Alcohol Enzymes. Mr. Knauf holds a B.S in biochemistry and biophysics and a master s degree in food science from the University of California, Davis.

Thomas R. Baruch has served as a director of Codexis since 2002. Mr. Baruch is the founder and a managing director of CMEA Ventures, a venture capital firm that was established in 1989 as an affiliated fund of New Enterprise Associates. Mr. Baruch brings to our board of directors knowledge of the

Table of Contents

biotechnology and clean technology industries as well as public company governance experience. Mr. Baruch currently serves as a director for various clean technology companies, including Biolight Harvesting, Inc., a company developing photosynthetic bacteria as part of a production platform for making renewable fuels and chemicals, Cnano Technology Limited, a leading nanomaterial company that manufactures and develops carbon nanotubes for advanced energy and other applications, Draths Corporation, a chemical company focused on enabling everyday materials to be manufactured from renewable feedstocks, Solyndra, Inc., a company that designs and manufactures photovoltaic systems for the commercial rooftop market, and Wildcast Discovery Technologies, Inc., a company focused on the discovery of advanced materials for clean energy technology applications. In addition, Mr. Baruch is currently on the board of directors of Entropic Communications, Inc., and serves on the compensation, nominating and corporate governance and audit committees of Entropic s board of directors. Before starting CMEA Ventures, Mr. Baruch was a founder and Chief Executive Officer of Microwave Technology, Inc., a supplier of gallium arsenide integrated circuits. Prior to his employment with Microwave Technology, Inc., Mr. Baruch managed a dedicated venture fund at Exxon Corp, and was president of the Exxon Materials Division. Earlier in his career, Mr. Baruch worked as a patent attorney and remains a registered patent attorney. He is also both a member of the Executive Committee of the Council of Competitiveness and a member of the Steering Committee of the ESIS Initiative (Energy, Security, Innovation and Sustainability) of the Council of Competitiveness. Mr. Baruch is a member of the board of trustees of Rensselaer Polytechnic Institute and the board of trustees of the Berkeley Institute of Synthetic Biology. Mr. Baruch holds a B.S. in engineering from Rensselaer Polytechnic Institute and a J.D. from Capital University.

Alexander A. Karsner has served as a director of Codexis since December 2009. Mr. Karsner brings to our board of directors experience in and knowledge of the energy industry and related public policy. He is currently Chief Executive Officer of Manifest Energy, LLC, a clean energy infrastructure development and finance company. Mr. Karsner served as Assistant Secretary for Energy Efficiency and Renewable Energy at the U.S. Department of Energy from March 2006 to August 2008. From April 2002 to March 2006, Mr. Karsner was Managing Director of Enercorp LLC, a private company involved in international project development, management and financing of renewable energy infrastructure. Mr. Karsner has also worked with Tondu Energy Systems of Texas, Wartsila Power Development of Finland and other multi-national energy firms and developers. Mr. Karsner is a director of Applied Materials, Inc., Conservation International, Argonne National Laboratory, the Gas Technology Institute, the National Marine Sanctuaries Foundation and is on the advisory board of Hudson Clean Energy and the Automotive X Prize. He is a Distinguished Fellow at the Council on Competitiveness and a leader of the Energy Future Coalition. Mr. Karsner earned a Masters degree at Hong Kong University and a Bachelors degree with honors from Rice University.

Bernard J. Kelley has served as a director of Codexis since April 2004. Mr. Kelley brings to our board of directors experience in pharmaceutical manufacturing, as well as senior management and financial operations experience. From 1993 to 2002, Mr. Kelley was the President of the Merck Manufacturing Division, a division of Merck & Co., Inc., a global pharmaceutical company, and he served as a member of the Merck Management Committee from 1995 to 2002. Mr. Kelley currently serves on the board of directors, compensation and audit committees of MAP Pharmaceuticals, Inc., a biotechnology company focused on developing inhalation-based therapies, and previously served on the board of directors of Aegis Analytical Corporation, an enterprise software company, from 2004 to 2006. He holds a B.S. in engineering from the U.S. Naval Academy.

Bruce Pasternack has served as a director of Codexis since August 2007. Mr. Pasternack brings to our board of directors knowledge of the energy industry and business and regulatory experience. Mr. Pasternack is currently an operating partner of Venrock, a venture capital firm. From December 2007 to February 2010, Mr. Pasternack was a venture partner of CMEA Capital. From June 2005 to May 2007, Mr. Pasternack served as the President and Chief Executive Officer of Special Olympics, Inc. Prior to his

employment with Special Olympics, Inc., Mr. Pasternack spent more than 28 years at Booz Allen Hamilton Inc., a consulting firm, where his last position was Senior Vice President and Managing Partner of its San Francisco office. From 1973 to 1976, he served as Associate Administrator for Policy and Program Evaluation at the Federal Energy Administration, and Staff Director of the President s Energy Resources Council. From 1972 to 1973, he served on the staff of the President s Council on Environmental Quality in the Executive Office of the President. From 1968 to 1972, he was a systems engineer at General Electric. Mr. Pasternack is a director of Quantum Corporation, the American Council on Renewable Energy and Symyx Technologies, Inc., a member of the board of trustees of The Cooper Union and has previously served on the board of directors of BEA Systems, Inc. and the Special Olympics, Inc. At Symyx Technologies, he is Lead Director and Chairman of the compensation committee. At Quantum Corporation, he is a member of the compensation committee. At BEA Systems, he was a member of the compensation committee. He holds a B.E. from The Cooper Union and a M.S.E. from the University of Pennsylvania.

Chris Streng has served as a director of Codexis since March 2009. He is currently employed by Shell Downstream Inc., an affiliate of Royal Dutch Shell plc and its affiliated companies, or the Shell Group, where he has served as Vice President Finance Manufacturing since 2007 and is based in Houston, Texas. In such position, he is responsible for finance for refinery and petrochemical plants in the Shell Group worldwide. Mr. Streng s variety of experiences with Shell provides our board of directors with insight into the energy industry and financial management expertise. From 2005 to 2007, Mr. Streng was Vice President Group Planning & Appraisal, based in The Hague, The Netherlands. He joined the Shell Group in 1990, and has held financial management positions in the Shell Group s exploration and production, refining and chemicals businesses, as well as the mergers & acquisitions and treasury functions in The Netherlands, the United Kingdom, Norway and the United States. He also serves as a director or in an equivalent position for certain refining joint ventures in which Shell Group companies are owners. Mr. Streng holds a master s degree in finance from the London Business School and graduated in business engineering from the University of Twente, The Netherlands.

James R. Sulat has served as a director of Codexis since October 2009. Mr. Sulat brings to our board of directors experience in the biotechnology industry, as well as senior management and financial operations experience. He was named Chief Executive Officer and Chief Financial Officer of Maxygen in October 2009. He has served as a director of Maxygen since 2003 and served as a member of its audit and nominating and corporate governance committees from 2003 through October 2009. He served as Chief Financial Officer of Memory Pharmaceuticals Corp., a biotechnology company, from February through September 2008, and Chief Executive Officer from May 2005 to February 2008. Mr. Sulat was Senior Executive Vice President and Interim Chief Financial Officer of R.R. Donnelley & Sons Co., a diversified printing company, from February 2004 until May 2004. From April 2003 to February 2004, Mr. Sulat was Senior Executive Vice President of Moore Wallace Incorporated, a diversified printing company that was acquired by R.R. Donnelley in 2004. From April 1998 to April 2003, Mr. Sulat was Vice President and Chief Financial Officer of Chiron Corporation, a biotechnology company. Mr. Sulat is also currently a director of Momenta Pharmaceuticals, Inc., a publicly-traded biotechnology company focused on the development of protein pharmaceuticals, and Intercell AG, a developer of vaccines for the prevention and treatment of major infectious diseases that is listed on the Vienna Stock Exchange, and serves on the audit and nominating and corporate governance committees for both companies. Mr. Sulat also previously served as a director of Memory Pharmaceuticals Corp. Mr. Sulat holds a B.S. from Yale University, an M.B.A. from Stanford University and an M.S. in health services administration from Stanford University.

Dennis P. Wolf has served as a director of Codexis since December 2007. Mr. Wolf brings to our board of directors extensive experience in financial management, corporate finance and public company corporate governance. Mr. Wolf currently serves as Senior Vice President and Chief Financial Officer of Fusion-io Multisystems, Inc. Previously, Mr. Wolf served as Executive Vice President and CFO of MySQL AB. Prior to MySQL, Mr. Wolf held financial management positions for public high technology companies

Table of Contents

including Apple Computer, Inc., Centigram Communications, Inc., Credence Systems Corporation, Omnicell, Inc., Redback Networks Inc. and Sun Microsystems, Inc. Mr. Wolf is a director of Bigband Networks, Inc. and Quantum Corporation, where he is also a member of their respective audit committees, and has been a director and chair of the audit committee for other public and private companies including Registry Magic, Inc., Avanex Corporation, Komag, Inc. and Vitria Technology, Inc. He holds a B.A. from the University of Colorado and an M.B.A. from the University of Denver.

Mun Yew Wong, M.D., has served as a director of Codexis since October 2009. As Director (Investments), San Francisco Centre for EDB Investments Pte Ltd, or EDB Investments, and Bio*One Capital Pte Ltd, or Bio*One, Dr. Wong possesses knowledge of the biotechnology and clean technology industries. He has served on boards of Bio*One portfolio companies NeuroVision Pte Ltd, KOOPrime Pte Ltd in Singapore and Amaranth Medical Inc. in the U.S. In February 2007, he was appointed as Director (Investments) at Bio*One s U.S. office in the San Francisco Bay Area, focusing on the biotechnology sector. He expanded his portfolio coverage to clean technologies and digital media sectors in the United States when he was concurrently appointed Director (Investments) at EDB Investments in January 2009. In addition to his role at Codexis, he is a board observer for Innovalight, Inc., Pelikan Technologies, Inc. and Revance Therapeutics, Inc., and has previously held board observer positions in Fluidigm Corporation, Kalobios Pharmaceutical Inc., Broncus Technologies Inc., and Adamas Pharmaceuticals Inc. Dr. Wong has also served as a director of Amaranth Medical Inc. He holds an M.D. from the National University of Singapore.

Board Composition

Our board of directors may establish the authorized number of directors from time to time by resolution. Ten directors are authorized and we currently have nine directors, of which five are designated by the current holders of our preferred stock, three are designated by the current holders of our preferred and common stock, and one also serves as our Chief Executive Officer. Dr. Wong and Mr. Sulat will resign from our board of directors in connection with the closing of our initial public offering. Of the members of our board of directors, Messrs. Baruch, Kelley, Pasternack, Wolf and Dr. Wong are independent directors as defined under the applicable rules and regulations of the Securities and Exchange Commission, or the SEC, and The Nasdaq Stock Market.

Under the terms of our amended and restated certificate of incorporation and the voting agreement among us and the holders of our preferred stock, the members of our board of directors are to be designated as follows: Equilon Enterprises LLC dba Shell Oil Products US, or Shell, has the right to designate two members; Biomedical Sciences Investment Fund Pte Ltd, CMEA Ventures Life Sciences 2000, L.P., FirstMark III, L.P. and Maxygen, Inc., each have the right to designate one member; one member shall be our Chief Executive Officer; and the remainder shall be designated with the consent of the parties holding a majority of the outstanding common and preferred stock. Upon the consummation of this offering, all of these provisions will terminate, except that for a ten-year period Shell will have the right to designate one board member for so long as: Shell holds at least 50% of the total number of shares of common stock issued upon conversion of the preferred stock purchased by Shell, and at least 5% of our fully diluted number of shares of common stock outstanding, and the collaborative research agreement between us and Shell has not expired or been terminated. The designee of Shell will be subject to the reasonable approval of a majority of the members of the board of directors.

Table of Contents

In accordance with our amended and restated certificate of incorporation to take effect following the completion of this offering, our board of directors will be divided into three classes with staggered three-year terms. At each annual meeting of stockholders, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification until the third annual meeting following election. After the completion of this offering, our directors will be divided among the three classes as follows:

- the Class I directors will be Bruce Pasternack and Alexander A. Karsner, and their terms will expire at the annual meeting of stockholders to be held in 2011;
- the Class II directors will be Alan Shaw, Thomas R. Baruch and Bernard J. Kelley, and their terms will expire at the annual meeting of stockholders to be held in 2012; and
- the Class III directors will be Chris Streng and Dennis P. Wolf, and their terms will expire at the annual meeting of stockholders to be held in 2013.

Our amended and restated certificate of incorporation will provide that the authorized number of directors may be changed only by resolution of the board of directors. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consists of one-third of the directors. The division of our board of directors into three classes with staggered three-year terms may delay or prevent a change of our management or a change of control at our company. The role of Chairman of our board of directors is separate from the Chief Executive Officer position, in order to ensure independent leadership of the board of directors. Our board of directors has determined that its structure is appropriate to fulfill its duties effectively and efficiently, so that our Chief Executive Officer can focus on leading our company, while the Chairman can focus on leading the board of directors in overseeing management.

Risk Oversight

Our board of directors generally oversees corporate risk in its review and deliberations relating to our activities, including financial and strategic risk relevant to our operations. In addition, our board of directors regularly reviews information regarding our credit, liquidity and operations, as well as the risks associated with each. The audit committee oversees management of financial risks. The compensation committee is responsible for overseeing the management of risks relating to our executive compensation plans and arrangements and employee retention. The nominating and corporate governance committee manages risks associated with the independence of the board of directors and potential conflicts of interest. While each committee is responsible for evaluating certain risks and overseeing the management of such risks, the entire board of directors is regularly informed through committee reports about such risks. Our board of directors believes its administration of its risk oversight function has not affected the board of directors leadership structure.

Risk Assessment and Compensation Practices

Our management assessed and discussed with our compensation committee our compensation policies and practices for our employees as they relate to our risk management and, based upon this assessment, we believe that any risks arising from such policies and practices are not reasonably likely to have a material adverse effect on us in the future.

Our employees base salaries are fixed in amount and thus we do not believe that they encourage excessive risk-taking. While performance-based cash bonuses and sales commissions focus on achievement of short-term or annual goals, which may encourage the taking of short-term or annual risks at the expense of long-term results, we believe that our compensation policies help mitigate this risk and our performance-based cash bonuses and sales commissions are limited, representing a small portion of the total compensation opportunities available to most employees. We also believe that our performance-based cash bonuses and sales commissions appropriately balance risk and the desire to focus our employees on specific short-term goals important to our success, and do not encourage unnecessary or excessive risk-taking.

Table of Contents

A significant proportion of the compensation provided to our employees is in the form of long-term equity-based incentives that we believe are important to help further align our employees interests with those of our stockholders. We do not believe that these equity-based incentives encourage unnecessary or excessive risk taking because their ultimate value is tied to our stock price.

Board Diversity

Our nominating and corporate governance committee is responsible for reviewing with the board of directors, on an annual basis, the appropriate characteristics, skills and experience required for the board of directors as a whole and its individual members. In evaluating the suitability of individual candidates (both new candidates and current members), the nominating and corporate governance committee, in recommending candidates for election, and the board of directors, in approving (and, in the case of vacancies, appointing) such candidates, takes into account many factors, including: personal and professional integrity, ethics and values; experience in corporate management, such as serving as an officer or former officer of a publicly held company; experience in the industries in which we compete; experience as a board member of another publicly held company; diversity of expertise and experience in substantive matters pertaining to our business relative to other board members; conflicts of interest; and practical and mature business judgment. The board of directors evaluates each individual in the context of the board of directors as a whole, with the objective of assembling a group that can best maximize the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas.

Board Committees

Our board of directors has the following committees: an audit committee, a compensation committee and a nominating and corporate governance committee. The composition and responsibilities of each committee are described below. Members serve on these committees until their resignation or until otherwise determined by our board of directors.

Audit Committee

Our audit committee oversees our corporate accounting and financial reporting process. Among other matters, the audit committee appoints the independent registered public accounting firm; evaluates the independent registered public accounting firm s qualifications, independence and performance; determines the engagement of the independent registered public accounting firm; reviews and approves the scope of the annual audit and the audit fee; discusses with management and the independent registered public accounting firm the results of the annual audit and the review of our quarterly consolidated financial statements; approves the retention of the independent registered public accounting firm to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent registered public accounting firm on our engagement team as required by law; reviews our consolidated financial statements and our management s discussion and analysis of financial condition and results of operations to be included in our annual and quarterly reports to be filed with the SEC, reviews our critical accounting policies and estimates; and annually reviews the audit committee charter and the committee s performance. The current members of our audit committee are Thomas R. Baruch, Bernard J. Kelley and Dennis P. Wolf. Mr. Wolf serves as the chairman of the committee. All members of our audit committee meet the requirements for financial literacy under the applicable rules and regulations of the SEC and The Nasdaq Stock Market. Our board of directors has determined that Mr. Wolf is an audit committee financial expert as defined under the applicable rules of the SEC and has the requisite financial sophistication as defined under the applicable rules and regulations of The Nasdaq Stock Market. Each of the members of our audit committee, except Mr. Baruch, qualifies as an independent director under the applicable rules and regulations of the SEC and The Nasdaq Stock Market relating to audit committee independence. Within one year from the date of effectiveness of our initial public offering registration statement, our board of directors intends to replace Mr. Baruch as a member of our audit committee with a person who will meet

Table of Contents

these heightened independence standards. The audit committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Stock Market.

Compensation Committee

Our compensation committee reviews and recommends policies relating to compensation and benefits of our officers and employees. The compensation committee reviews and approves corporate goals and objectives relevant to compensation of our Chief Executive Officer and other executive officers, evaluates the performance of these officers in light of those goals and objectives, and sets the compensation of these officers based on such evaluations. The compensation committee also recommends to our board of directors the issuance of stock options and other awards under our stock plans. The compensation committee will review and evaluate, at least annually, the performance of the compensation committee and its members, including compliance of the compensation committee with its charter. The current members of our compensation committee are Thomas R. Baruch, Bernard J. Kelley and Bruce Pasternack. Mr. Pasternack serves as the chairman of the committee. Each of the members of our compensation committee is an independent or outside director under the applicable rules and regulations of the SEC, The Nasdaq Stock Market and the Internal Revenue Code of 1986, as amended, relating to Compensation Committee independence. The compensation committee operates under a written charter.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is responsible for making recommendations to our board of directors regarding candidates for directorships and the size and composition of our board of directors. In addition, the nominating and corporate governance committee is responsible for overseeing our corporate governance policies and reporting and making recommendations to our board of directors concerning governance matters. The current members of our nominating and corporate governance committee are Thomas R. Baruch, Bruce Pasternack and Dennis P. Wolf. Mr. Baruch serves as the chairman of the committee. Each of the members of our nominating and corporate governance committee is an independent director under the applicable rules and regulations of the SEC and The Nasdaq Stock Market relating to nominating and corporate governance committee independence. The nominating and corporate governance committee operates under a written charter.

There are no family relationships among any of our directors or executive officers.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee has at any time during the prior three years been an officer or employee of ours. None of our executive officers currently serves or in the prior three years has served as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving on our board of directors or compensation committee.

Code of Business Conduct and Ethics

We will adopt a code of business conduct and ethics that applies to all of our employees, officers and directors, including those officers responsible for financial reporting. The code of business conduct and ethics will be available on our website at www.codexis.com. We expect that any amendments to the code, or any waivers of its requirements, will be disclosed on our website.

Director Compensation

In June 2007, our board of directors adopted an Independent Director Compensation Plan pursuant to which those directors designated as directors who are not affiliated with the Company s major stockholders by the board of directors for purposes of the Independent Director Compensation Plan were entitled to receive an annual cash retainer of $35,000, paid in semi-annual installments on June 30 and December 31 of each year, and the reimbursement of any actual out-of-pocket expenses. In addition, the Independent Director Compensation Plan provides for the grant of an annual option to purchase 16,666 shares of our

Table of Contents

common stock, to be granted at the first board of directors meeting of each year. These options vest as to 1/4th of the total number of shares subject to the option on the first anniversary of the vesting commencement date, and 1/48th of the total number of shares subject to the option monthly thereafter until all shares are vested, subject to the continued service of the director on the board of directors. Pursuant to the Independent Director Compensation Plan, each of Messrs. Kelley, Pasternack and Wolf were granted an option to purchase 16,666 shares of our common stock on June 2, 2009 with a per share exercise price of $7.46, which our board of directors determined was the per share fair market value of our common stock as of the date of grant.

Following the completion of this offering, each non-employee director shall receive an annual cash retainer of $40,000 per year. Such directors shall also receive an additional annual cash retainer of $8,000 per year for being a member of our compensation committee, except that the chairperson of our compensation committee shall receive an additional annual cash retainer of $16,000 per year. Non-employee directors shall also receive an additional annual cash retainer of $4,000 per year for being a member of our nominating and corporate governance committee, except that the chairperson of our nominating and corporate governance committee shall receive an additional annual cash retainer of $8,000 per year. Non-employee directors shall also receive an additional annual cash retainer of $8,000 per year for being a member of our audit committee, except that the chairperson of our audit committee shall receive an additional annual cash retainer of $16,000 per year.

Upon election to our board of directors, each non-employee director shall receive an initial option grant of an option to purchase 25,000 shares of our common stock with a per share exercise price equal to the per share closing trading price of our common stock on the date of grant. Such initial option grant shall be vested and become exercisable as to 1/4th of the total number of shares subject to the option on the first anniversary of the date the director commences service on our board of directors, with the remainder of the option vesting and becoming exercisable at a rate of one quarter of the total number of shares subject to the option each year thereafter. On the date of each annual meeting of stockholders beginning in 2011, each non-employee director who has served at least six months on our board of directors shall also receive an annual grant of an option to purchase 12,500 shares of our common stock with a per share exercise price equal to the per share closing trading price of our common stock on the date of grant. Such annual option grant shall be vested and become exercisable as to the total number of shares subject to the option on the one year anniversary of the date of grant.

From August 2009, after the termination of employment of our former Chief Financial Officer, until October 31, 2009, Mr. Wolf provided additional services as chairman of the audit committee. Mr. Wolf received $5,000 per week for these additional services, which were limited to advising management on accounting and financial matters.

On December 14, 2009, we entered into a consulting agreement with Mr. Karsner pursuant to which he agreed to provide strategic advisory services related to the energy industry and government policy in connection with our proprietary enzyme and biocatalytic processes. Pursuant to the terms of the agreement, Mr. Karsner is entitled to receive, in his capacity as a consultant, $30,000 per quarter and was granted stock options to purchase 66,666 shares of our common stock at an exercise prices of $9.09 per share, which our directors determined was the per share fair market value of our common stock as of the date of the grant. These options vest at a rate of 1/48th of the total shares subject to the option each month from the date of the agreement, subject to Mr. Karsner s continued service as a consultant. On December 14, 2009, pursuant to the Independent Director Compensation Plan, Mr. Karsner was also granted an option to purchase 16,666 shares of our common stock, also with a per share exercise price of $9.09.

In February 2010, upon the recommendation of our compensation committee, our board of directors approved annual option grants to purchase 16,666 shares of our common stock with a per share exercise price of $10.92 to Messrs. Kelley, Pasternack and Wolf pursuant to the Independent Director Compensation Plan. These options will vest as to 1/4th of the total number of shares subject to the option

Table of Contents

on January 1, 2011 and 1/48th of the total number of shares subject to the option monthly thereafter until all shares are vested, subject to their continued service to our company.

Director Compensation Table

The following table sets forth information regarding compensation earned by our non-employee directors during the fiscal year ended December 31, 2009.

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)(1)	All Other Compensation ($)	Total ($)
Thomas R. Baruch	$	$	$	$
Bernard J. Kelley	35,000	83,385		118,385
Bruce Pasternack	35,000	83,385		118,385
Dennis P. Wolf	35,000	83,385	88,000(2)	206,385
Chris Streng				
Mun Yew Mong, M.D.				
James R. Sulat				
Alexander A. Karsner	1,630	625,763(3)		627,393

(1) Amount reflects the grant date fair value of options granted in the year ended December 31, 2009 calculated in accordance with Statement of Financial Accounting Standard Board Accounting Standards Codification Topic 718, Stock Compensation, or ASC Topic 718, other than as set forth in footnote 3. The valuation assumptions used in determining such amounts are described in Note 13 to our financial statements included in this prospectus. As of December 31, 2009, Mr. Kelley, Mr. Pasternack, Mr. Wolf and Mr. Karsner had outstanding option awards to purchase an aggregate of 71,664, 49,998, 49,998 and 83,332 shares, respectively.

(2) Amount includes fees earned for additional services as chairman of the audit committee, which were limited to advising management on accounting and financial matters after the termination of employment of our former Chief Financial Officer on June 30, 2009 until October 31, 2009.

(3) $525,580 of such amount reflects the grant date fair value of options to purchase 66,666 shares of our common stock granted to Mr. Karsner on December 14, 2009 in consideration of his service as a consultant to us, as calculated in accordance with Statement of Financial Accounting Standard Board Accounting Standards Codification Topic 505.50, Equity-Based Payments to Non-Employees, or ASC Topic 505.50. The remaining $100,183 is the grant date fair value for options granted to Mr. Karsner as a director, also calculated in accordance with ASC Topic 718. The valuation assumptions used in determining such amount are similar to the assumptions described in Note 13 to our financial statements included in this prospectus.

Executive Compensation

Compensation Discussion and Analysis

Our executive compensation program is designed to attract talented individuals to lead, manage and operate all aspects of our business and reward and retain those individuals who continue to meet our high expectations over time. Our executive compensation program combines short- and long-term components, cash and equity, and fixed and contingent payments in the amounts and proportions that we believe are most appropriate to incentivize and reward our executive officers for achieving our objectives. Our executive compensation program also is intended to make us competitive in our industry, where there is considerable competition for talented executives.

Our named executive officers for fiscal year 2009 were Alan Shaw, Ph.D., President and Chief Executive Officer; Robert J. Lawson, Senior Vice President and Chief Financial Officer; Joseph J. Sarret, M.D., J.D., Chief Business Officer and President, Pharmaceutical Services and Enzyme Products; Douglas

111

Table of Contents

T. Sheehy, Senior Vice President, General Counsel and Secretary; David L. Anton, Ph.D., Senior Vice President, Research and Development; and Robert S. Breuil, former Senior Vice President, Finance and Chief Financial Officer. Mr. Breuil s employment with us terminated as of June 30, 2009.

Objectives and Philosophy of Our Executive Compensation Program

Our compensation program for our named executive officers is designed to achieve the following objectives:

- attract, engage and retain individuals of superior ability, experience and managerial talent enabling us to be an employer of choice in our highly-competitive and dynamic industry;
- motivate and reward executives whose knowledge, skills and performance ensure our continued success;
- encourage and inspire our executives to achieve key corporate performance objectives by linking base salary increases and incentive award opportunities to the achievement of individual and company-wide short- and long-term goals; and
- align the interests of our executives and stockholders by motivating executives to increase stockholder value, by providing a significant portion of total compensation opportunities for our executive officers in the form of direct ownership in our company through stock options and other equity awards.

Components of Our Executive Compensation Program

The components of our executive compensation program consist primarily of base salaries, annual cash incentive bonuses, equity awards and broad-based benefits programs. We combine short-term compensation components (such as base salaries and annual cash incentive bonuses) and long-term compensation components (such as equity incentive awards) to provide an overall compensation structure that is designed to both attract and retain key executives as well as provide incentive for the achievement of short- and long-term corporate objectives.

The compensation committee of our board of directors is responsible for evaluating and administering our compensation programs and practices for our executive officers. Our compensation committee uses its judgment and experience and the recommendations of the Chief Executive Officer to determine the appropriate mix of short- and long-term compensation elements for each named executive officer. Short- and long-term compensation elements are balanced to encourage each executive officer to use his or her time and talents to accomplish both our short- and long-term corporate objectives. Our Chief Executive Officer, General Counsel and Vice President of Human Resources each attend our compensation committee meetings to provide input on factors that may influence our compensation committee members consideration of compensation programs and individual compensation, including individual performance, financial, legal and compensation parity considerations. In addition, our Chief Financial Officer occasionally attends such compensation committee meetings depending on the issues being discussed. Each such officer is not present at the meetings at the time that his or her own compensation is being reviewed by the committee. Our compensation committee analyzes each of the primary elements of our compensation program to ensure that our executives overall compensation is competitive with executive officers in similar positions at comparable companies in our labor market and to ensure internal compensation parity among our executive officers. Our compensation committee recommends and our board of directors approves equity incentive awards for our employees, including our executive officers.

Our compensation committee determines compensation for our executive officers, including our named executive officers, in large part based upon our financial resources, as well as competitive market data. With regard to annual base salaries and annual cash incentive bonus opportunity targets for fiscal year

Table of Contents

2009, our compensation committee reviewed comprehensive compensation data from the Radford Global Life Sciences Survey, which aggregated survey results from 130 biotechnology, pharmaceutical and medical device companies in Northern California with revenues of less than $1 billion. For fiscal year 2009, our compensation committee also reviewed data aggregated and compiled by Compensia, Inc. from a late 2008 survey of a large number of late-stage, pre-IPO life sciences companies. For the purposes of the Compensia survey, late-stage was defined as companies which had raised more than $75 million in capital. While our compensation committee reviewed compensation information from the Radford and Compensia surveys, our compensation committee was not aware of the identity of the surveyed companies and, as such, did not rely on data for any single company.

In late September 2009, based on the recommendation of Compensia, our compensation committee adopted a peer group of companies, which expands beyond life sciences companies and includes public biotechnology, biofuels/chemical and clean technology companies. The peer group for 2010 includes the following companies:

Affymax Inc.	Martek Biosciences Corporation
Dionex Corporation	Maxygen, Inc.
Energy Recovery, Inc.	Metabolix, Inc.
Evergreen Energy Inc.	Rentech, Inc.
Exelixis Inc.	SurModics, Inc.
FuelCell Energy, Inc.	Symyx Technologies, Inc.
Genomic Health, Inc.	Verenium Corporation
InterMune, Inc.	XenoPort, Inc.
Luminex Corporation	

We believe that the practices of the companies in the surveys we reviewed provide us with appropriate compensation benchmarks because many of these companies have similar organizational structures and tend to compete with us for executives. We work within the general framework of this market-competitive philosophy to determine each component of an executive s compensation package based on numerous factors, including:

- the demand for the particular skill sets we need within the marketplace;
- performance goals and other expectations for the position and the individual;
- the individual s background and relevant expertise, including training and prior relevant work experience;
- the individual s role with us and the compensation paid to similar persons at the companies that participate in the surveys that we review; and
- comparison to other executives within our company having similar levels of expertise and experience.

During 2009, our compensation committee reviewed all aspects of our executive compensation program, including base salaries, annual cash incentive bonuses and equity incentive targets for each of our executive officers. To ensure that top talent could be retained and attracted, in

2009 the compensation committee approved adjustments to our executive compensation program to reflect competitive pressures and ensure internal equity among executives with similar levels of responsibility and authority.

Each of the primary elements of our executive compensation program is discussed in more detail below. While we have identified particular compensation objectives that each element of executive compensation serves, our compensation programs are designed to be flexible and complementary and to collectively serve all of the executive compensation objectives described above. Accordingly, whether or not specifically mentioned below, we believe that, as a part of our overall executive compensation policy, each individual element of our executive compensation program, to a greater or lesser extent, serves each of our objectives as set forth above.

Table of Contents

Annual Cash Compensation

Base Salary

The base salaries of all executive officers are reviewed annually and adjusted when necessary to reflect individual roles and performance, and the competitive market. Our compensation committee also reviews each executive s annual base salary in comparison with other executives who are at the same level at our company and seeks parity among executives with similar levels of responsibility and authority. Our compensation committee believes that a competitive base salary is a necessary element of any compensation program designed to attract and retain talented and experienced executives. We also believe that competitive base salaries can motivate and reward executives for their overall performance.

However, in February 2009, in light of the then current economic conditions, our compensation committee decided to freeze all employees salaries, including our named executive officers, at their 2008 levels, with the exception of increases due to promotions and adjustments for exceptional performance for those employees who had base salaries which fell below the 50th percentile of base salaries for similar positions in the surveys we reviewed. The salary freeze was implemented in light of then-current economic conditions, similar salary freezes taking place at other similar companies in our geographical area and in order to preserve our cash reserves in the face of uncertainty in the financial and credit markets. In February 2009, upon recommendation of our Chief Executive Officer, after determining that Mr. Sheehy had exhibited exceptional performance in 2008 and was paid below the 50th percentile of executives in similar positions in the surveys we reviewed, which was $300,000, the compensation committee increased his base salary by $10,000 to $270,000. In November 2009, our compensation committee increased Mr. Sheehy s base salary from $270,000 to $300,000 in connection with his promotion to Senior Vice President, General Counsel and Secretary, for which the 50th percentile in the surveys we reviewed paid a salary of $303,000 for executives in similar positions. Our compensation committee increased Dr. Anton s base salary from $235,000 to $250,000 in February 2009 and to $270,000 in May 2009 in connection with promotions. Dr. Anton currently serves as Senior Vice President, Research and Development. Our compensation committee also increased Dr. Sarret s base salary from $240,000 to $270,000 in February 2009 and to $320,000 in October 2009 in connection with promotions. Dr. Sarret currently serves as Chief Business Officer and President, Pharmaceutical Services and Enzyme Products. In determining the amount of these salary raises, our compensation committee sought to achieve internal equity by setting salary levels at or near those of other executives with similar levels of responsibilities in the company, as well as external equity, by setting salary levels at or near the 50th percentile of executives in similar positions in the surveys we reviewed. The following table sets forth the base salaries for 2009 for each of our named executive officers and, where applicable, the percentage such salary increased over such executive s base salary as of December 31, 2008, as well as the 50th percentile of salaries paid to executives in similar positions in the surveys we reviewed:

Name of Executive Officer	Increase	50th Percentile(1)	2009 Base Salary Rate
Alan Shaw, Ph.D.	%	$ 405,000	$ 425,000
Robert J. Lawson		311,250	330,000
Douglas T. Sheehy	15.4	303,000	300,000
David L. Anton, Ph.D.	14.9	300,000	270,000
Joseph J. Sarret, M.D., J.D.	33.3	311,250	320,000
Robert S. Breuil		295,000(2)	320,000

(1) The 50th percentile information presented is taken as of the most recent review of, or increase in, each executive s base salary level.
(2) Mr. Breuil s base salary was not reviewed in 2009.

Table of Contents

In February 2010, again in light of then current economic conditions, our compensation committee decided to freeze all employees salaries, including our named executive officers, at their 2009 levels, with the exception of increases due to promotions and adjustments for those who fell significantly below the 50 th percentile of base salaries of executives in similar positions in the surveys we reviewed. In February 2010, after determining that Dr. Shaw s current base salary of $425,000 was significantly below that paid to the 50th percentile of executives at his level in the surveys we reviewed, which was $492,900, the compensation committee increased Dr. Shaw s base salary by $35,000 to $460,000. Similarly, in February 2010, upon the recommendation of our Chief Executive Officer, after determining that Dr. Anton s current base salary of $270,000 was significantly below that paid to the 50th percentile of executives at his level in the surveys we reviewed, or $310,600, the compensation committee increased Dr. Anton s base salary by $20,000 to $290,000. The following table sets forth the base salaries for 2010 for each of our named executive officers and, where applicable, the percentage such salary increased over such executive s base salary as of December 31, 2009:

Name of Executive Officer	Increase	2010 Base Salary
Alan Shaw, Ph.D.	8.2%	$ 460,000
Robert J. Lawson		330,000
Douglas T. Sheehy		300,000
David L. Anton, Ph.D.	7.4	290,000
Joseph J. Sarret, M.D., J.D.		320,000

Annual Cash Incentive Bonuses

Our compensation philosophy with respect to annual cash incentive bonuses is consistent with our overall compensation program philosophy. The annual cash incentive bonus is directed at tying individual compensation to both corporate and individual performance while maintaining market-competitive compensation. Performance, as measured against individual and corporate goals, directly affects the level of bonus payment.

Annual Cash Incentive Bonuses for 2009

In June 2009, our compensation committee adopted the 2009 Executive Incentive Compensation Plan, under which the annual cash incentive bonus targets set forth below were used along with corporate and individual performance targets set by our compensation committee.

Table of Contents

For 2009, our compensation committee retained the same target bonus percentages as in 2008 for Dr. Shaw and Mr. Breuil. Dr. Anton s bonus target percentage was increased to 30% of his base salary in February 2009 and to 40% of his base salary in May 2009, in connection with promotions. He currently serves as Senior Vice President, Research and Development. Likewise, Mr. Sheehy s target bonus percentage was increased to 40% in connection with his promotion to Senior Vice President, General Counsel and Secretary, which took place in November 2009. Similarly, Dr. Sarret s target bonus percentage was increased to 40% in February 2009 in connection with his promotion to Senior Vice President, Corporate Development. He currently serves as our Chief Business Officer and President, Pharmaceutical Services and Enzyme Products. In setting Dr. Anton s, Mr. Sheehy s and Dr. Sarret s target bonus percentage, our compensation committee considered the target bonus percentages of executives having a similar level of responsibility within our company. Mr. Lawson was not eligible for a bonus in 2009, as he joined our company in November 2009 and the 2009 Executive Incentive Compensation Plan does not permit participation for those who join the company after October 1, 2009. The table below sets forth the annual cash incentive bonus target for each of our named executive officers who was eligible to receive a bonus in 2009:

Name of Executive Officer	2009 Bonus Target (as % of 2009 Base Salary)
Alan Shaw, Ph.D.	50%
Douglas T. Sheehy(1)	31
David L. Anton, Ph.D.(2)	36
Joseph J. Sarret, M.D., J.D.(3)	38

(1) Represents a prorated amount. Mr. Sheehy s bonus target percentage was increased from 30% to 40% in November 2009 in connection with his promotion to Senior Vice President, General Counsel and Secretary.

(2) Represents a prorated amount. Dr. Anton s bonus target percentage was increased first from 25% to 30% in February 2009 in connection with his promotion to Vice President Level II, Bioindustrial Research and Development, and then from 30% to 40% in May 2009 in connection with his promotion to Senior Vice President, Research and Development.

(3) Represents a prorated amount. Dr. Sarret s bonus target percentage was increased from 30% to 40% in February 2009 in connection with his promotion to Senior Vice President, Corporate Development.

The company performance factor is subdivided into two separate factors: (i) the company non-financial performance factor; and (ii) the company financial performance factor. The company financial performance factor is measured based upon our company s achievement of three equally weighted financial goals established by our compensation committee, relating to revenues, earnings before the deduction of interest, tax, depreciation and amortization, or EBITDA, and year-end cash (book value of unrestricted cash and securities). The non-financial performance goals that comprise the company non-financial performance factor include the achievement of certain goals related to our collaboration with Shell, our pharmaceutical and carbon management markets, our strategic plan and improving internal controls. The company financial performance factor represents 45% of the total company performance factor and the company non-financial performance factor represents the other 55%. The company financial performance factor targets for revenues, EBITDA and year-end cash for 2009 were $81.6 million, $(9.1) million and $37.0 million, respectively.

The individual performance factor of the bonus is measured by our Chief Executive Officer s, or in the case of our Chief Executive Officer s performance, our compensation committee s, assessment of the overall performance of each of our executives using individual goals established for each executive by our compensation committee. These individual goals, and the target bonus percentages, are established based on our Chief Executive Officer s and our compensation committee s evaluation of each executive s position within the company, the corporate goals over which that executive has control or influence and the market

Table of Contents

practices of the companies in the surveys we reviewed. In setting individual performance factors and target bonus percentages for our named executive officers, our Chief Executive Officer, or in the case of our Chief Executive Officer s factor and target, our compensation committee also considered the target bonus percentages and individual performance factors of executives with similar levels of responsibility within the company to ensure parity between executives at similar position levels. The individual goals that comprise the individual performance factor for any one named executive officer are too numerous for any single individual goal to have a material impact on a named executive officer s total compensation but, taken as a whole, provide our Chief Executive Officer and our compensation committee insight into the individual performance level of our named executive officers. Examples of individual goals include achieving departmental budgets for revenues and margin, meeting sales and/or testing objectives, achieving milestones related to the development of new products, achieving recognition for a product or facility, securing supplies, meeting expansion goals and achieving or maintaining a professional standard. The individual goals that comprise the individual performance factor are set to be difficult to achieve and require above what our compensation committee has determined to be average performance in order to meet the minimum standard. Achievement against the goals set by the compensation committee or the Chief Executive Officer is determined by assessing whether a majority of individual goals were met or exceeded and is subject to upward and downward discretion by the Chief Executive Officer or the compensation committee.

Under the 2009 Executive Incentive Compensation Plan, no bonus is payable if our company achieves less than 80% of any single company financial performance goal, or if the executive s achievement of his individual target is less than 80%. Failure to achieve 80% of any goal that comprises the company non-financial performance factor will result in a zero for that particular goal, but will not alone result in zero total bonus. The maximum company performance factor achievement level is 120%, and there is a direct correlation between actual achievement and the company performance factor. Similarly, the maximum individual performance factor achievement level is 150%, with a direct correlation between individual achievement and the individual performance factor as follows:

Bonus Amount = (Base Salary) x (Target Percentage) x (Company Financial Performance Factor +

Company Non-Financial Performance Factor) x (Individual Performance Factor)

Table of Contents

In February 2010, our compensation committee determined that the corporate financial performance goals of revenues, EBITDA and year-end cash had been achieved in 2009 at $82.9 million, $(7.3) million and $55.6 million, respectively. These achievement levels yielded a corporate financial performance factor of 52%. Additionally, the compensation committee determined that the corporate non-financial performance goals related to our collaboration with Shell, our pharmaceutical and carbon management markets, our strategic plans and improved internal controls had been achieved at levels yielding a corporate non-financial performance factor of 53%. When combined, the company performance factor was achieved at a level of 105%. In February 2010, our compensation committee further determined that our named executive officers achieved their individual performance goals and awarded them bonuses at the levels in the following table. In determining the individual performance factor achievement, our compensation committee found that each of our named executive officers who had been employed by us throughout 2009 consistently exceeded his individual goals and surpassed each of his performance requirements. While each of our named executive officers was determined by our compensation committee to have achieved their individual performance factors at a level of 140% upon the recommendation of our Chief Executive Officer, the determination of each executive s individual performance factor was based on the achievement of individualized goals set by our Chief Executive Officer and our compensation committee and not all named executive officers had the same achievement with respect to all of their individual goals. Our compensation committee did not review Mr. Lawson s individual performance since he was not eligible for a bonus in 2009.

Name of Executive Officer	Bonus Target (Base Salary x Target %) ($)	2009 Individual Performance Factor (%)	2009 Company Performance Factor (%)	Bonus Payment ($)
Alan Shaw, Ph.D.	$ 212,500	140%	105%	$ 312,375
Douglas T. Sheehy	86,178	140	105	126,682
David L. Anton, Ph.D.	93,529	140	105	137,488
Joseph Sarret, M.D., J.D.	106,400	140	105	156,408

We believe that our annual cash incentive bonus plans help to attract and motivate our executives, and to align the compensation payable to our executives with our corporate objectives, thereby maximizing shareholder value. By evaluating our bonus program for executives each fiscal year, we believe we provide sufficient and attainable incentives for our executives that align with both our financial and non-financial goals.

Equity Incentive Compensation

We believe that our long-term performance is best facilitated through a culture of executive ownership that encourages long-term investment by our executive officers in our equity, thereby better aligning the executives interests with the interests of our stockholders. To encourage this ownership culture, we typically make an initial equity award of stock options to new employees and periodic grants at other times, as approved by our board of directors. Our compensation committee recommends and our board of directors approves all equity grants to our employees including our executive officers. These grants have an exercise price that is at least equal to the fair market value of our common stock on the date of grant, as determined by our board of directors. Grants of options in 2009 were typically subject to a four-year vesting schedule with 1/4th of the grant vesting upon the first anniversary of the vesting commencement date and the remainder of the shares vesting at a rate of 1/48th of the total shares subject to the option each month after the vesting commencement date, subject to the continued service of the executive officer. Vesting commencement dates generally correlate to the date of hire, date of promotion or date of grant. In keeping with our market-competitive philosophy, our compensation committee established the foregoing vesting schedules for 2009 because it determined such vesting represents market practice in our industry based on the experience of the members of our compensation committee.

The size of the initial stock option award is determined based on the executive s position with us and takes into account the executive s base salary and other compensation as well as an analysis of the grant

Table of Contents

and compensation practices of the companies that participate in the surveys that we review in connection with establishing our overall compensation policies. The initial stock option awards are intended to provide the executive with an incentive to build value in the organization over an extended period of time while remaining consistent with our overall compensation philosophy.

In 2009, we considered a number of factors in determining the amount of periodic equity incentive awards, if any, granted to our executives, including:

- the number of shares subject to outstanding options, both vested and unvested, held by our executives;
- the vesting schedule of the unvested stock options held by our executives; and
- the periodic equity incentive award practices observed in the surveys we reviewed.

In February 2009, our compensation committee determined that in order to best serve our retention goals, all 2009 refresher stock option grants would vest and become exercisable according to the following schedule: no shares vest until the 24th month following the vesting commencement date, after which 1/24th of the number of shares subject to the grant vest each month. Our named executive officers received the following refresher stock option grants in June 2009, each having an exercise price of $7.46 per share: Dr. Shaw (266,666 shares), Mr. Breuil (66,666 shares), Dr. Anton (23,333 shares), Dr. Sarret (13,333 shares) and Mr. Sheehy (33,333 shares). The size of grant was based on the compensation committee s review of data from surveys we considered, grants made to individuals at similar levels within the Company and correlated with the level of authority and responsibility of the named executive officer. Similar to our initial stock option grants, these refresher grants are intended to continue to provide the executive with an incentive to build value in the organization over an extended period of time while remaining consistent with our overall compensation philosophy. In addition to his refresher grant, Dr. Anton received stock options to purchase 23,333 shares and 33,333 shares of our common stock for an exercise price of $7.46 per share in June 2009, which our board of directors determined was the per share fair market value of our common stock as of the date of grant, in connection with promotions in February and May 2009. He currently serves as our Senior Vice President, Research and Development. In addition to his refresher grant, Dr. Sarret received stock options to purchase 37,000 shares and 120,000 shares of our common stock for exercise prices of $7.46 per share and $9.09 per share, respectively, in June and November 2009, which our board of directors determined was the per share fair market value of our common stock as of the date of grant, in connection with promotions in February and October 2009. He currently serves as our Chief Business Officer and President, Pharmaceutical Services and Enzyme Products. Additionally, Mr. Sheehy received a stock option to purchase 40,666 shares of our common stock for an exercise price of $9.09 per share in November 2009, which our board of directors determined was the per share fair market value of our common stock as of the date of grant, in connection with his promotion to Senior Vice President, General Counsel and Secretary. The size of Dr. Sarret s, Dr. Anton s and Mr. Sheehy s grants was determined based on the relative size of option grants provided to other executive officers.

Mr. Lawson was granted an initial stock option to purchase 266,666 shares of our common stock for an exercise price of $9.09 per share, which our board of directors determined was the per share fair market value of our common stock as of the date of grant, in connection with his commencement of employment with our company in November 2009. The size of Mr. Lawson s initial grant was determined through arm s length negotiations between us and Mr. Lawson in connection with the commencement of his employment with us, and was intended to further compensate Mr. Lawson for the decrease in salary that Mr. Lawson agreed to as compared to the position he held prior to joining our company. Our compensation committee also consulted Compensia regarding the reasonableness of the size of Mr. Lawson s option grant and were advised that the size of Mr. Lawson s initial grant was consistent with ownership levels at other late-stage pre-IPO companies. This award vests and becomes exercisable according to the following schedule: 1/4th of the shares vest on the one year anniversary of the commencement of his employment

with us and the remainder of the shares vest at a rate of 1/48th of the total shares subject to the option each month thereafter, subject to his continued service.

In February and March 2010, upon the recommendation of our compensation committee, our board of directors awarded option grants to certain of our executives, including certain of our named executive officers. While no single factor determined the size of these grants, our compensation committee generally considered the following factors in making such grants: internal equity among executives, the percentage of equity holdings that remain unvested, whether each executive s equity holdings provide adequate incentive and retention value, individual performance, tenure with our company and the critical nature of each executive s role at our company. Our named executive officers received the following grants in the following amounts: Dr. Shaw (266,666 shares), Mr. Lawson (26,666 shares), Mr. Sheehy (33,333 shares), Dr. Anton (53,333 shares) and Dr. Sarret (33,333 shares). The grants to each named executive officer had an exercise price of $10.92 per share, except for Dr. Sarret, whose grant had an exercise price of $11.87 per share. Absent the completion of this offering, these stock options vest and become exercisable with respect to 100% of the shares subject thereto on January 1, 2015; however, upon consummation of this offering, the vesting schedule will revert to our standard vesting schedule, such that 1/4th of the shares subject to the option will vest on January 1, 2011 and the remainder of the shares vest at a rate of 1/48th of the total shares subject to the option each month thereafter, subject to the executive s continued service.

As a privately owned company, there has been no market for our common stock. Accordingly, in 2009, we had no program, plan or practice pertaining to the timing of stock option grants to executive officers coinciding with the release of material non-public information. The compensation committee intends to adopt a formal policy regarding the timing of grants in connection with this offering.

Termination-Based Compensation

Our compensation committee provides our executives with termination protection when it determines that such protection is necessary to attract or retain an executive.

We have entered into change in control agreements with Dr. Shaw, Mr. Breuil, Dr. Sarret, Mr. Lawson and Mr. Sheehy, which provide severance payments and benefits in the event the executive is terminated without cause, resigns with good reason, or terminates for death or disability within 12 months following or, in certain circumstances, when the executive is terminated without cause or resigns with good reason within a short period prior to a change in control of our company, defined generally as our dissolution or liquidation; a sale of all or substantially all of our assets; a merger, acquisition or consolidation in which the beneficial ownership of our securities representing at least 50% of the combined voting power entitled to vote in the election of our directors has changed; or if current members of our board of directors, or their successors if approved by the vote of at least 50% of the current board, cease to constitute at least 50% of our board of directors, each as further set forth in the individual agreements.

The severance payments and benefits that are payable under the change in control agreements are further described below in the section entitled Change in Control Agreements.

Other Compensation

All of our executive officers are eligible to participate in certain benefit plans and arrangements offered to employees generally, including health, dental, life and disability insurance and our 401(k) plan. We currently pay in excess of 85% of the monthly premium, with respect to coverage for the employee only portion of coverage for all employees, including our named executive officers, for medical, dental, vision, life and long-term disability insurance. Should medical insurance premium rates increase, employees, including named executive officers, may be required to contribute to the cost of increased premiums to retain coverage. Consistent with our market-competitive compensation philosophy, we intend to continue to maintain these benefit plans and arrangements for our employees, including our executive

Table of Contents

officers. Our compensation committee in its discretion may revise, amend or add to any executive s benefits and perquisites if it deems it advisable. We currently do not believe it is necessary for the attraction or retention of management talent to provide the officers with a substantial amount of compensation in the form of perquisites.

Tax Considerations

Section 162(m) of the Internal Revenue Code of 1986, as amended, or the Code, generally disallows a tax deduction for compensation in excess of $1.0 million paid to certain named executive officers. Qualifying performance-based compensation is not subject to the deduction limitation if specified requirements are met. We generally intend to structure the performance-based portion of our executive compensation, when feasible, to comply with exemptions in Section 162(m) so that the compensation remains tax deductible to us. However, our board of directors may, in its judgment, authorize compensation payments that do not comply with the exemptions in Section 162(m) when it believes that such payments are appropriate to attract and retain executive talent.

Table of Contents

2009 Summary Compensation Table

The following table summarizes the compensation that we paid to our Chief Executive Officer, Chief Financial Officer and each of our three other most highly compensated executive officers during the year ended December 31, 2009. We refer to these officers in this prospectus as our named executive officers.

Name	Year	Salary ($)	Bonus ($)	Option Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)(2)	All Other Compensation ($)	Total ($)
Alan Shaw, Ph.D., President and Chief Executive Officer						$ 638(3)	
					$ 312,375		
	2009	$ 425,000	$	$ 1,368,640			$ 2,106,653
	2008	425,000	149,899				574,899
	2007	385,000		1,472,329	259,875		2,117,204
Robert J. Lawson, Senior Vice President and Chief Financial Officer(4)	2009	55,000	50,000(5)	1,602,640		53(3)	1,707,693
Douglas T. Sheehy, Senior Vice President, General Counsel and Secretary				415,483		638(3)	
					126,682		
	2009	272,660					815,463
	2008	260,000	55,022				315,022
	2007	164,522		313,604	79,200		557,326
David L. Anton, Ph.D., Senior Vice President, Research & Development					137,488	1,045(6)	
	2009	260,308		403,265			802,106
	2008	176,250	42,019	671,640		146,583	1,036,492
Joseph J. Sarret, M.D., J.D., Chief Business Officer and President, Pharmaceutical Services and Enzyme Products	2009	275,417		974,735	156,408	6,051(7)	1,412,611
Robert S. Breuil, Former Senior Vice President, Finance and Chief Financial Officer(8)				342,160		194,895(9)	
	2009	160,000					697,055
	2008	320,000	72,234				392,234
	2007	288,750		577,315	133,908		999,973

(1) The amounts included in the Option Awards column represent the grant date fair value calculated in accordance with ASC Topic 718. The valuation assumptions used in determining such amounts are described in Note 13 to our consolidated financial statements included in this prospectus.

(2) Amounts reflect bonus payments made pursuant to the 2009 Executive Incentive Bonus Plan. Mr. Lawson was not eligible for the executive incentive compensation plan in 2009. Mr. Breuil did not receive any amount under the 2009 Executive Incentive Bonus Plan as his employment with us terminated prior to December 31, 2009.

(3) Represents long-term disability insurance premiums.

(4) Mr. Lawson joined Codexis as Senior Vice President and Chief Financial Officer in November 2009.

(5) Represents amount paid as new hire bonus of $50,000.

(6) Represents long-term disability insurance premiums of $638 and amount paid to reimburse health club membership of $407.

(7) Represents additional medical benefits of $5,413 and long-term disability premiums of $638.

(8) Mr. Breuil s employment with us terminated effective as of June 30, 2009.

(9) Represents severance pay amounting to $160,000, paid vacation and time-off of $34,257 and long-term disability premiums of $638.

Table of Contents

Grants of Plan-Based Awards in 2009 Table

All options granted to our named executive officers are incentive stock options, to the extent permissible under the Code. The exercise price per share of each option granted to our named executive officers was determined to be equal to at least the fair market value of our common stock by our board of directors on the date of the grant. All options were granted under our 2002 Stock Plan, as amended, as described below in the section entitled Employee Benefit and Stock Plans 2002 Stock Plan, as amended.

The following table shows information regarding grants of equity awards during the year ended December 31, 2009 to each of our named executive officers.

		Estimated Future Payouts Under Non-Equity Incentive Plan Awards($)(1)			All Other Option Awards; Number of Securities Underlying Options	Exercise or Base Price of Option Awards	Grant Date Fair Value of Option Awards
Name	Grant Date	Threshold	Target	Maximum	(#)	($/Share)	($)(2)
Alan Shaw, Ph.D.		$ 136,000	$ 212,500	$ 382,500		$	$
	6/2/2009				266,666	7.46	5.13
Robert J. Lawson(3)	11/9/2009				266,666	9.09	6.02
Douglas T. Sheehy		55,154	86,178	155,121			
	6/2/2009				33,333	7.46	5.13
	11/9/2009				40,666	9.09	6.02
David L. Anton, Ph.D.		59,859	93,529	168,353			
	6/2/2009				23,333	7.46	5.01
	6/2/2009				33,333	7.46	5.01
	6/2/2009				23,333	7.46	5.13
Joseph J. Sarret, M.D., J.D.		68,096	106,400	191,520			
	6/2/2009				37,000	7.46	5.01
	6/2/2009				13,333	7.46	5.13
	11/9/2009				120,000	9.09	6.02
Robert S. Breuil	6/2/2009				66,666	7.46	5.13

(1) Amounts in the Estimated Future Payouts Under Non-Equity Incentive Plan Awards column relate to amounts payable under our Executive Incentive Compensation Plan. The threshold column assumes the achievement of either the corporate or individual goals at the threshold level. The maximum column assumes the maximum achievement for both corporate and individual goals. Actual amounts paid to our named executive officers are set forth in the section titled 2009 Summary Compensation Table.

(2) The amount set forth in the Grant Date Fair Value of Option Awards column are the per share full grant date fair value of the award determined in accordance with ASC Topic 718. The valuation assumptions used in determining such amounts are described in Note 13 to our consolidated financial statements included in this prospectus.