CODEXIS INC
Form S-1/A
February 01, 2010
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As filed with the Securities and Exchange Commission on February 1, 2010

Registration No. 333-164044

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 2

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 Aggregate Offering Price(1)	Amount of Registration Fee(2)
Common Stock, $0.0001 par value	$100,000,000	$7,130

(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 remaining balance of the registration fee, or $3,200, was previously paid in connection with the initial filing of this Registration Statement on December 28, 2009.

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.

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The information contained in this prospectus is not complete and may be changed. We and the selling stockholders 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 and the selling stockholders are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED FEBRUARY 1, 2010

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 $ and $ per share. We have applied to list our common stock on The Nasdaq Global Market under the symbol CDXS.

We are selling shares of our common stock through the underwriters. The selling stockholders identified in this prospectus are offering an additional shares through the underwriters. We will not receive any of the proceeds from the sale of the shares being sold by the selling stockholders.

To the extent the underwriters sell more than shares of common stock, the underwriters have the option to purchase up to an additional shares from us, at the initial public offering price, less the underwriting discounts and commissions.

Investing in our common stock involves risks. See Risk Factors beginning on page 11.

	Price to Public	Underwriting Discounts and Commissions	Proceeds to Codexis	Proceeds to Selling Stockholders
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 these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Credit Suisse **Goldman, Sachs & Co.**

Piper Jaffray **RBC Capital Markets** **Pacific Crest Securities**

The date of this prospectus is , 2010.

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You should rely only on the information contained in this prospectus. We, the selling stockholders and the underwriters have not authorized anyone to provide you with information different from that contained in this prospectus. We and the selling stockholders 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.

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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

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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;

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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. Under the Energy Independence and Security Act of 2007, a minimum of 21 billion gallons of advanced biofuels must be sold in the United States by 2022. 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 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.

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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 2008, 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.

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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 and key pharmaceutical intermediates and APIs. For example, in August 2008, we entered into an expanded supply relationship with Arch for the manufacture of intermediates and APIs for specified pharmaceutical products.

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 September 30, 2009, Maxygen beneficially owned approximately 21.6% 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 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.

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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.

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The Offering

Common stock offered by Codexis	shares (or shares if the underwriters exercise their option to purchase additional shares in full).
Common stock offered by the selling stockholders	shares.
Common stock to be outstanding after this offering	shares (or shares if the underwriters exercise their option to purchase additional shares in full).
Proposed Nasdaq Global Market symbol	CDXS
Use of proceeds	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. We will not receive any proceeds from the sale of shares by the selling stockholders. Please see Use of Proceeds.
Risk factors	See Risk Factors starting on page 11 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 41,599,768 shares outstanding as of September 30, 2009 and excludes:

- 10,962,854 shares of common stock issuable upon the exercise of options outstanding as of September 30, 2009 at a weighted average exercise price of $3.25 per share;
- 491,513 shares of common stock issuable upon the exercise of warrants outstanding as of September 30, 2009 at a weighted average exercise price of $3.95 per share; and
- 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 3,226,648 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of September 30, 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:

- the conversion of all of our outstanding shares of preferred stock into 37,624,216 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 option to purchase additional shares;

an amendment to certain of our preferred stock financing documents prior to the consummation of this offering; and

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

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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.

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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, 2006, 2007 and 2008 from our audited consolidated financial statements appearing elsewhere in this prospectus. We have derived the consolidated statements of operations data for the nine months ended September 30, 2008 and 2009 and the consolidated balance sheet data as of September 30, 2009 from our unaudited financial statements appearing elsewhere in this prospectus. You should read this table together with our consolidated financial statements and the accompanying notes, Selected Consolidated Financial Data and Management s Discussion and Analysis of Financial Condition and Results of Operations appearing elsewhere in this prospectus. The unaudited interim financial statements have been prepared on the same basis as the annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary to state fairly our financial position as of September 30, 2009 and results of operations and cash flows for the nine months ended September 30, 2008 and 2009. 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,			Nine Months Ended September 30,	
	2006	2007	2008	2008	2009
	(in thousands, except per share amounts)				
Consolidated Statements of Operations Data:					
Revenues:					
Product	$ 2,544	$ 11,418	$ 16,860	$ 10,777	$ 13,401
Related party collaborative research and development	863	8,481	30,239	18,174	43,963
Collaborative research and development	8,403	4,733	3,062	2,678	1,295
Government grants	317	701	317	251	11
Total revenues	12,127	25,333	50,478	31,880	58,670
Costs and operating expenses:					
Cost of product revenues	1,806	8,319	13,188	7,922	11,886
Research and development	17,257	35,644	45,554	33,250	39,486
Selling, general and administrative	11,880	19,713	35,709	28,300	20,939
Total costs and operating expenses	30,943	63,676	94,451	69,472	72,311
Loss from operations	(18,816)	(38,343)	(43,973)	(37,592)	(13,641)
Interest income	742	1,491	1,538	1,435	141
Interest expense and other, net	(724)	(2,533)	(2,365)	(2,517)	(1,530)
Loss before provision (benefit) for income taxes	(18,798)	(39,385)	(44,800)	(38,674)	(15,030)
Provision (benefit) for income taxes	(127)	(408)	327	126	79
Net loss	$ (18,671)	$ (38,977)	$ (45,127)	$ (38,800)	$ (15,109)
Net loss per share of common stock, basic and diluted	$ (10.99)	$ (15.53)	$ (12.64)	$ (11.02)	$ (3.86)
Weighted average common shares used in computing net loss per share of common stock, basic and diluted	1,699	2,510	3,570	3,521	3,917

Net loss used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)	$ (45,230)	$ (14,760)
Pro forma net loss per share of common stock, basic and diluted (unaudited)(1)	$ (1.26)	$ (0.37)
Weighted average common shares used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(1)	35,900	39,684

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(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.

	September 30, 2009		
	Actual	Pro Forma(1)	Pro Forma As Adjusted(2)(3)
		(in thousands)	
Consolidated Balance Sheet Data:			
Cash, cash equivalents and marketable securities	$ 55,962	$ 55,962	
Working capital	28,061	29,792	
Total assets	93,207	93,207	
Redeemable convertible preferred stock warrant liability	1,731		
Current and long-term financing obligations	9,505	9,505	
Redeemable convertible preferred stock	177,746		
Stockholders (deficit) equity	(140,893)	38,584	

(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, 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 shares of common stock in this offering at an assumed initial public offering price of $ 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 $ 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 $ 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.

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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;

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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 $18.7 million, $39.0 million and $45.1 million in 2006, 2007 and 2008, respectively, and $15.1 million for the nine months ended September 30, 2009. As of September 30, 2009, we had an accumulated deficit of $154.4 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

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and we do not expect to achieve profitability during this period, if ever. If we fail to achieve profitability, or if the time required to achieve profitability is longer than we anticipate, we may not be able to continue our business. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

In each of the last two audits of our consolidated financial statements, we and our independent registered public accounting firm have identified a material weakness and other deficiencies in our internal control over financial reporting. If we fail to remediate the 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.

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 below, may have been identified.

Solely 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 (i) our lack of policies and procedures, with the associated internal controls, to appropriately address complex, non-routine transactions and (ii) the lack of a sufficient number of qualified personnel to timely account for such transactions in accordance with U.S. generally accepted accounting principles. We and our independent registered public accounting firm identified the following issues during the audit, which collectively gave rise to the conclusion that we had an underlying material weakness: (i) inadequate policies to address the increasingly complex revenue arrangements that we enter into; (ii) failure to correctly and timely identify all data required to evaluate the accounting impact of stock option grants and to recognize all requirements under applicable accounting standards; (iii) accounting issues that arose in connection with two acquisitions; (iv) improper recording of foreign currency cumulative translation adjustments; and (v) failure to effectively track and value inventory. 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.

Solely in connection with the audit of our consolidated financial statements for 2008, we and our independent registered public accounting firm identified a material weakness and two significant deficiencies in our internal control over financial reporting. The material weakness 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. We and our independent registered public accounting firm identified the following issues during the audit, which collectively gave rise to the conclusion that we had an underlying material weakness: (i) duplicative accrual relating to legal expenses in our accounting records; (ii) incorrect inputs relating to the Black-Scholes calculation of fair value of non-employee stock options and warrants; (iii) under accrual of expenses for tax consulting work; (iv) incorrect input of costs eligible for reimbursement under a license agreement; (v) errors in the valuation of inventory; and (vi) failure to accrue penalties associated with foreign filing requirements. We and our independent registered public accounting firm also identified two significant deficiencies in our internal control over financial reporting relating to (i) misapplication of U.S. generally accepted accounting principles and (ii) an ineffective contract compliance process. The material weakness and significant deficiencies resulted in the recording of numerous audit adjustments.

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We have not yet been able to remediate the deficiencies identified in these audits. However, we have taken numerous steps and plan to take additional significant steps intended to address the underlying causes of

the material weaknesses and significant deficiencies in the immediate future, primarily through the development and implementation of formal 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. We do not know the specific timeframe needed to remediate all of the control deficiencies underlying these material weaknesses and significant deficiencies. In addition, we may incur significant incremental costs associated with this remediation, primarily due to the procurement, implementation and validation of robust accounting and financial reporting systems, the hiring of additional finance and accounting personnel and the continued use of third-party experts and contractors.

If we fail to enhance our 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 addition, while we currently rely on 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 reliance on 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 all of the control deficiencies underlying our existing material weaknesses or significant deficiencies 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, and the emerging need for complex inter-subsidiary transactions. If our efforts to remediate these control deficiencies 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 $7.8 million, $1.0 million and $4.2 million for 2007 and 2008 and for the nine months ended September 30, 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

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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 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.

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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;
- 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 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

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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 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 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 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, they have no obligation to purchase their 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.

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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 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.

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.

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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.

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 nine months ended September 30, 2009, our top five customers accounted for 90% of our total revenues, with Shell accounting for 75% 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 commercial 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

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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.

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 intermediates and 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 atorvastatin and all intermediates used to manufacture atorvastatin.

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

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

Pursuant to our arrangements with Arch, Arch manufactures certain of our intermediates and APIs that we then sell in the United States, India, Europe, Canada and Israel, with Arch as our marketing partner in those countries. In the rest of the world, Arch will market and sell certain of our products, but we have agreed with Arch that, if Arch s sales of our products exceed a certain dollar threshold in any one year in these territories, we will re-evaluate the payment structure for these sales and which party will continue to sell products in these territories. We must therefore rely on Arch for their financial resources and their marketing expertise for the commercialization of our products in these regions. We cannot control Arch s level of activity or expenditure relating to the marketing of our 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 our products. If we are unable to effectively leverage Arch s marketing capabilities or Arch does not successfully promote our 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 our products to the marketplace.

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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 300 employees as of September 30, 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 material weaknesses and significant deficiencies in our internal control over financial reporting that were identified in our last two audits, 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.

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

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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;
- 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

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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 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

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

Our approach to the 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 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 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 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

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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;
- 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;

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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.

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

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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 availability 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 do so 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.

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

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such, as of September 30, 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 September 30, 2009, we owned approximately 35 issued patents and approximately 110 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 commercialize products in 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.

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

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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

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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

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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

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overcome the ethical, legal, and social concerns relating to genetic engineering, our products and processes 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

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future laws could result in the imposition of fines, third party property damage, product liability and personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations, 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

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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.

When this offering is completed, our officers, directors and existing stockholders who hold at least 5% of our stock will together control approximately % of our outstanding common stock. As of September 30, 2009, Maxygen, Shell and Biomedical Sciences Investment Fund Pte Ltd beneficially owned approximately 21.6%, 20% and 12.1% 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;

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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 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 or our 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 September 30, 2009, our three largest stockholders beneficially own, collectively, approximately 54% 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 September 30, 2009, upon completion of this offering, we will have outstanding shares of common stock, assuming no exercise of the

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underwriters option to purchase additional shares. This includes the shares that we and the selling stockholders are selling in this offering. Of the remaining shares, shares of common stock will be subject to a 180-day contractual lock-up with the underwriters, and shares of common stock will be subject to a 180-day contractual lock-up with us.

In addition, as of September 30, 2009, there were 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 shares of our common stock, will have rights, subject to some conditions, to require us to file registration statements covering their shares and to include their shares in registration statements that we may file for ourselves or other stockholders. Holders of an aggregate of approximately additional shares of our common stock as of September 30, 2009, will have rights, subject to some conditions, to include their shares in registration statements that we may file for ourselves or other stockholders.

We also intend to register all shares of common stock that we may issue under our 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, 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 $ per share in the price you pay for shares of our common stock as compared to its tangible book value, assuming an initial public offering price of $ 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.

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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, imposes 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. We may not be able to remediate the material weakness in our internal control over financial reporting prior to the time of this testing. Our compliance with Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues. We will need to hire additional accounting and financial staff with appropriate public company experience and technical accounting knowledge. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we are unable to remediate the material weakness in our internal control over financial reporting 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 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.

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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.

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USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately $ million from the sale of shares of common stock offered in this offering and the selling stockholders will receive net proceeds of approximately $ million from the sale of shares of common stock offered in this offering, based on an assumed initial public offering price of $ 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 and the selling stockholders. A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) the net proceeds to us from this offering by $ million and increase (decrease) the net proceeds to the selling stockholders by $ million, assuming that the number of shares offered by us and the selling stockholders, 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 and the selling stockholders. If the underwriters exercise their option to purchase additional shares in full, we estimate that our net proceeds will be approximately $ 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.

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CAPITALIZATION

The following table sets forth our cash, cash equivalents and marketable securities and our capitalization as of September 30, 2009:

- on an actual basis;
- on a pro forma basis to reflect:
  - the filing of a restated certificate of incorporation to authorize shares of common stock and shares of undesignated preferred stock;
  - the conversion of all of our outstanding shares of redeemable convertible preferred stock into 37,624,216 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 shares at a price of $ 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 September 30, 2009		
	Actual	Pro Forma (unaudited)	Pro Forma As Adjusted
	(in thousands, except share data)		
Cash, cash equivalents and marketable securities	$ 55,962	$ 55,962	$
Redeemable convertible preferred stock warrant liability	$ 1,731	$	$
Financing obligations, net of current portion	3,412	3,412	
Redeemable convertible preferred stock, $0.0001 par value per share; 39,204,886 shares authorized, 37,563,610 shares issued and outstanding, actual; no shares authorized, no shares issued and outstanding, pro forma and pro forma as adjusted	177,746		
Stockholders equity (deficit):			
Preferred stock, $0.0001 par value per share; no shares authorized, issued and outstanding, actual; shares authorized, no shares issued and outstanding, pro forma; shares authorized, no shares issued and outstanding, pro forma as adjusted			
Common stock, $0.0001 par value per share; 68,000,000 shares authorized; 3,975,552 issued and outstanding, actual; shares authorized, 41,599,768 shares issued and outstanding, pro forma; shares authorized, shares issued and outstanding, pro forma as adjusted		4	

Additional paid-in capital	13,324	192,797	
Accumulated other comprehensive income	211	211	
Accumulated deficit	(154,428)	(154,428)	
Total stockholders equity (deficit)	(140,893)	38,584	
Total capitalization	$ 41,996	$ 41,996	$

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Each $1.00 increase or decrease in the assumed initial public offering price of $ 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 $ 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 September 30, 2009 and excludes:

- 10,962,854 shares of common stock issuable upon the exercise of options outstanding as of September 30, 2009 at a weighted average exercise price of $3.25 per share;

- 491,513 shares of common stock issuable upon the exercise of warrants outstanding as of September 30, 2009 at a weighted average exercise price of $3.95 per share; and

- 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 3,226,648 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of September 30, 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).

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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 September 30, 2009 was $34.2 million, or $0.82 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 September 30, 2009, after giving effect to the conversion of all outstanding shares of preferred stock into shares of common stock as if the conversion occurred on September 30, 2009. Our pro forma as adjusted net tangible book value at September 30, 2009, after giving effect to the sale by us of shares of common stock in this offering at an assumed initial public offering price of $ 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 $ million, or $ per share. This represents an immediate increase in pro forma as adjusted net tangible book value of $ per share to existing stockholders and an immediate dilution of $ per share to new investors, or approximately % of the assumed initial public offering price of $ per share. The following table illustrates this per share dilution:

Assumed initial public offering price per share		$
Pro forma net tangible book value per share at September 30, 2009	$ 0.82	
Increase in pro forma net tangible book value per share attributable to this offering		
Pro forma as adjusted net tangible book value per share after this offering		
Dilution per share to new investors		$

A $1.00 increase (decrease) in the assumed initial public offering price of $ 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 $ million, the pro forma as adjusted net tangible book value per share by $ per share and the dilution in the pro forma net tangible book value to new investors in this offering by $ 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 September 30, 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 $ 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		%	$	%	$
New investors					
Total		100.0%	$	100.0%	$

A $1.00 increase (decrease) in the assumed initial public offering price of $ 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

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share paid by all stockholders by $, $ and $, respectively, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the underwriting discount and estimated offering expenses payable by us.

The sale of shares of our common stock to be sold by the selling stockholders in this offering will reduce the number of shares of our common stock held by existing stockholders to , or % of the total shares outstanding, and will increase the number of shares of our common stock held by new investors to , or % of the total shares of our common stock outstanding.

The discussion and tables in this section regarding dilution are based on 41,599,768 shares of common stock issued and outstanding as of September 30, 2009 which reflects the automatic conversion of all of our preferred stock into an aggregate of 37,624,216 shares of our common stock, and excludes:

- shares of common stock issuable upon the exercise of 10,962,854 options outstanding at a weighted average exercise price of $3.25 per share;
- shares of common stock issuable upon exercise of 491,513 warrants outstanding at a weighted average exercise price of $3.95 per share; and
- 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 3,226,648 shares of common stock reserved for future grant or issuance under our 2002 Stock Plan as of September 30, 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 option to purchase additional shares in full, the following will occur:

- the number of shares of our common stock held by existing stockholders would decrease to approximately % 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 % 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 September 30, 2009 would have been $71.8 million, or $1.35 per share, and the pro forma, as adjusted net tangible book value after this offering would have been $ million, or $ per share, causing dilution to new investors of $ 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.

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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 2006, 2007 and 2008 and the consolidated balance sheets data as of December 31, 2007 and 2008 from our audited consolidated financial statements appearing elsewhere in this prospectus. The consolidated statement of operations data for 2004 and 2005 and the consolidated balance sheets data as of December 31, 2004, 2005 and 2006 have been derived from our audited consolidated financial statements not included in this prospectus. The consolidated statements of operations data for the nine months ended September 30, 2008 and 2009 and the consolidated balance sheet data as of September 30, 2009 are derived from our unaudited consolidated financial statements appearing elsewhere in this prospectus. The unaudited interim financial statements have been prepared on the same basis as the annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary to state fairly our financial position as of September 30, 2009 and results of operations and cash flows for the nine months ended September 30, 2008 and 2009. Operating results for the nine months ended September 30, 2009 are not necessarily indicative of the results that may be expected for the year ended December 31, 2009. The data should be read in conjunction with the consolidated financial statements, related notes, and other financial information included herein.

	Years Ended December 31,					Nine Months Ended September 30,	
	2004	2005	2006	2007	2008	2008	2009
	(in thousands, except per share amounts)						
Consolidated Statements of Operations Data:							
Revenues:							
Product	$	$ 2,265	$ 2,544	$ 11,418	$ 16,860	$ 10,777	$ 13,401
Related party collaborative research and development			863	8,481	30,239	18,174	43,963
Collaborative research and development	4,873	9,363	8,403	4,733	3,062	2,678	1,295
Government grants		156	317	701	317	251	11
Total revenues	4,873	11,784	12,127	25,333	50,478	31,880	58,670
Costs and operating expenses:							
Cost of product revenues		2,233	1,806	8,319	13,188	7,922	11,886
Research and development	12,891	12,839	17,257	35,644	45,554	33,250	39,486
Selling, general and administrative	5,187	7,891	11,880	19,713	35,709	28,300	20,939
Total costs and operating expenses	18,078	22,963	30,943	63,676	94,451	69,472	72,311
Loss from operations	(13,205)	(11,179)	(18,816)	(38,343)	(43,973)	(37,592)	(13,641)
Interest income	240	245	742	1,491	1,538	1,435	141
Interest expense and other, net	(128)	(413)	(724)	(2,533)	(2,365)	(2,517)	(1,530)
Loss before provision (benefit) for income taxes	(13,093)	(11,347)	(18,798)	(39,385)	(44,800)	(38,674)	(15,030)
Provision (benefit) for income taxes		243	(127)	(408)	327	126	79
Net loss	(13,093)	(11,590)	(18,671)	(38,977)	(45,127)	(38,800)	(15,109)
Accretion of redeemable convertible preferred stock(1)	(1,250)						
Net loss attributable to common stockholders	$ (14,343)	$ (11,590)	$ (18,671)	$ (38,977)	$ (45,127)	$ (38,800)	$ (15,109)
Net loss attributable to common stockholders per share of common stock, basic and diluted(2)	$ (13.38)	$ (7.69)	$ (10.99)	$ (15.53)	$ (12.64)	$ (11.02)	$ (3.86)

Weighted average common shares used in computing net loss per share of common stock, basic and diluted(2)	1,072	1,508	1,699	2,510	3,570	3,521	3,917
Net loss used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(2)					$ (45,230)		$ (14,760)
Pro forma net loss per share of common stock, basic and diluted (unaudited)(2)					$ (1.26)		$ (0.37)
Weighted average common shares used in computing pro forma net loss per share of common stock, basic and diluted (unaudited)(2)					35,900		39,684

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(1) During 2004, we recorded accretion to increase the redeemable convertible preferred stock to its redemption value due to the voting majority held by a certain stockholder which could effect a liquidation of the redeemable convertible preferred stock, pursuant to EITF Topic D-98 (incorporated in Accounting Standards Codification, or ASC, Topic 480, *Distinguishing Liabilities from Equity*). In 2005, the probability of the liquidation of the redeemable convertible preferred stock was reduced and accordingly we no longer recorded the related accretion subsequent to December 31, 2004.

(2) 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.

	December 31,					September 30,
	2004	2005	2006	2007	2008	2009
	(in thousands)					
Consolidated Balance Sheets Data:						
Cash, cash equivalents and marketable securities	$ 16,734	$ 7,005	$ 32,246	$ 84,070	$ 37,130	$ 55,962
Working capital	12,837	2,781	22,972	60,732	5,933	28,061
Total assets	23,276	21,380	46,659	113,541	70,882	93,207
Current and long-term financing obligations	2,306	4,017	4,073	17,407	13,348	9,505
Redeemable convertible preferred stock	27,779	37,750	77,513	132,746	132,746	177,746
Total stockholders deficit	(12,984)	(34,774)	(52,766)	(87,468)	(129,124)	(140,893)

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MANAGEMENT S DISCUSSION AND ANALYSIS OF

FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read 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. Over the last three fiscal years, revenues grew from $12.1 million in 2006 to $25.3 million in 2007 and again to $50.5 million in 2008. In the nine months ended September 30, 2009, our total revenues grew to $58.7 million from $31.9 million for the comparable period in 2008, which represents an 84% increase. Most of our revenues since inception have been derived from collaborative research and development arrangements, which accounted for 76%, 52% and 66% of our revenues in 2006, 2007 and 2008, respectively, and 77% of our revenues in the nine months ended September 30, 2009. Related party collaborative research and development received from Shell accounted for 33% and 60% of our revenues in 2007 and 2008, respectively, and 75% of our revenues in the nine months ended September 30, 2009. Our product sales have grown over the last three years, from $2.5 million in 2006 to $16.9 million in 2008. 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 September 30, 2009, we had an accumulated deficit of $154.4 million. We incurred net losses of $18.7 million, $39.0 million, $45.1 million and $15.1 million in 2006, 2007, 2008 and the nine months ended September 30, 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, such that we do not 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

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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 a milestone payment.

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 2009, we agreed to devote to the research collaboration FTEs by March 2009, which are required to be funded by Shell at an annual base rate per FTE of $ for FTEs located in the United States, and $ for FTEs located in Hungary. These annual base rates per FTE are subject to annual increases of 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 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 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

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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 milestone payments of up to $ over the remaining term of the agreement, contingent upon the achievement of certain technical goals beginning in 2009, and a milestone payment of $ upon achievement of certain commercial goals. For the nine months ended September 30, 2009, we have met or exceeded each of our technical goals under the collaborative research agreement by the applicable deadlines and have earned a milestone payment of $0.5 million. In the fourth quarter of 2009, we became entitled to receive an additional $ million in milestone payments linked to achievement of technical goals. 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

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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 $3.97 per share, the price per share of our Series D preferred stock. With regard to FTE funding, we are only obligated to pay Maxygen to the extent the consideration received exceeds a specified amount, which was initially $ per year starting in November 2006, but is adjusted annually by . 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 $7.8 million and $1.0 million for 2007 and 2008, respectively, of which $ and $, respectively, were payments owed to Maxygen in connection with Shell s FTE funding. For the nine months ended September 30, 2008 and 2009, we were obligated to pay Maxygen $0.6 million and $4.2 million, respectively, of which $ and $, 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, and Lactosan GmbH & Co. KG, or Lactosan, to manufacture substantially all of the commercial biocatalysts used in our pharmaceutical business. We have qualified other contract manufacturers, but we do not currently use them for any of our supply commitments. In addition, we contract with other suppliers in Austria, Germany, Italy and India. 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.

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

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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.

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 the nine months ended September 30, 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. We believe that, 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 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,

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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 when incurred. Our research and development efforts devoted to our internal product and process development projects increased significantly in 2007, 2008 and the nine months ended September 30, 2009, from 31 projects in 2006 to 46, 47 and 62 projects, respectively. 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.

To approximate research and development expenses by funded category, we estimate, based on FTE efforts, the percentage of research and development efforts, as measured in hours incurred. The number of hours expended in each category is divided by the total number of hours expended on all categories of research and development with the resulting fractions then multiplied by the total cost of research and development effort, with the products then added to project-specific external costs. In the case where a collaborator is sharing the research and development costs, the expenses for that project are allocated proportionately between the collaborative projects funded by third parties and internal projects. We believe that presenting our research and development expenses in these categories will provide our investors with meaningful information on how our resources are being used.

The following table presents our approximate research and development expenses by funding category (in thousands):

	Years Ended December 31,			Nine Months Ended September 30,	
	2006	2007	2008	2008	2009
Collaborative research and development(1)	$ 4,150	$ 10,920	$ 17,368	$ 10,894	$ 28,554
Grants	25	384	155	113	
Internal projects	13,082	24,340	28,031	22,243	10,932
Total research and development expenses	$ 17,257	$ 35,644	$ 45,554	$ 33,250	$ 39,486

(1) Research and development expenses related to collaborative projects funded by related and other third parties are less than the reported revenues due to the recognition of revenues from the amortization of non-refundable up-front payments.

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

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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 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 substantive and at risk at the inception of the arrangement 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

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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.

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.

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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	1,095,550	$ 7.00	$ 6.25	$ (0.75)
May 22, 2008	250,000	7.90	7.90	
September 25, 2008(1)	10,000	4.57	7.19	2.62
September 25, 2008	750,012	7.19	7.19	
June 2, 2009	1,683,000	4.97	4.97	
August 5, 2009	376,495	4.93	4.93	
November 9, 2009	891,750	6.06	6.06	
	5,056,807			

(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 $7.19 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 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,		Nine months ended September 30,	
	2007	2008	2008	2009
Weighted-average expected term (years)	6.0	6.1	6.1	6.1
Weighted-average expected volatility	48%	57%	57%	75%
Weighted-average risk-free interest rates	4.3%	3.2%	3.2%	2.5%
Expected dividend yield	0.0%	0.0%	0.0%	0.0%

As a result of our Black-Scholes fair value calculations and the allocation of value to the vesting periods using the straight-line vesting attribution method, we recognized a total of $64,000 in stock-based

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compensation expense during 2006, of which $32,000 was attributable to employee stock options and $32,000 was attributable to non-employee stock options. Of these amounts, $61,000 was recorded as a selling, general and administrative expense while $3,000 was recorded as a research and development expense. 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 general and administrative expense while $1.5 million was recorded as a research and development expense. In the nine months ended September 30, 2008 and 2009, we recognized a total of $2.4 million and $3.2 million in stock-based compensation expense, respectively, of which $2.1 million and $3.1 million, respectively, was attributable to employee stock options and $0.3 million and $0.1 million, respectively, was attributable to non-employee stock options. Of this total amount for the nine months ended September 30, 2008 and 2009, $1.4 million and $1.6 million, respectively, was recorded as a selling, general and administrative expense, while $1.0 million and $1.6 million, respectively, 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 10,000 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.

For our contemporaneous and retrospective valuations performed between December 2006 and September 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

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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 $4.93 and $6.06 per share during 2009. We granted stock options with exercise prices between $4.57 and $7.90 per share during 2008. No single event caused the valuation of our common stock to increase or decrease from January 2008 to September 2009; 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 $6.25 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 $7.90 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 $8.10 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 $7.19 per share.

October 2008 to December 2008: In November, 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 $5.42 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 $4.96 per share.

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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 $4.93 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 $6.06 per share.

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 current 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 $0.2 million and $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 2006 and 2007, respectively. For the year ended December 31, 2008, a gain of $0.1 million was recognized in interest expense and other, net as a result of warrant liability measurement. During the nine months ended September 30, 2008 and 2009, losses of $0.6 million and $0.3 million, respectively, were 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 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.

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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 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.

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Results of Operations

Nine Months Ended September 30, 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).

	Nine Months Ended September 30,			
	2008	2009	$ Change	% Change
Revenues:				
Product	$ 10,777	$ 13,401	$ 2,624	24%
Related party collaborative research and development	18,174	43,963	25,789	142
Collaborative research and development	2,678	1,295	(1,383)	(52)
Government grants	251	11	(240)	(96)
Total revenues	31,880	58,670	26,790	84
Costs and operating expenses:				
Cost of product revenues	7,922	11,886	3,964	50
Research and development	33,250	39,486	6,236	19
Selling, general and administrative	28,300	20,939	(7,361)	(26)
Total costs and operating expenses	69,472	72,311	2,839	4
Loss from operations	(37,592)	(13,641)	23,951	(64)
Interest income	1,435	141	(1,294)	(90)
Interest expense and other, net	(2,517)	(1,530)	987	(39)
Loss before provision for income taxes	(38,674)	(15,030)	23,644	(61)
Provision for income taxes	126	79	(47)	(37)
Net loss	$ (38,800)	$ (15,109)	$ 23,691	(61)%

Revenues. Revenues increased $26.8 million, or 84%, from $31.9 million in the nine months ended September 30, 2008 to $58.7 million in the nine months ended September 30, 2009, primarily due to increases in revenues from related party collaborative research and development projects and product sales.

Product revenues increased $2.6 million, or 24%, from $10.8 million in the nine months ended September 30, 2008 to $13.4 million in the nine months ended September 30, 2009. This increase was primarily due to an increase in product sales to a pharmaceutical customer during the nine months ended September 30, 2009.

Related party collaborative research and development revenues increased $25.8 million, or 142%, from $18.2 million in the nine months ended September 30, 2008 to $44.0 million in the nine months ended September 30, 2009. This increase was due to the increase in the number of FTEs engaged in our expanded research and development collaboration with Shell. The expansion of this collaboration resulted in an increase in the number of contractual FTEs used during the period from an average of in the nine months ended September 30, 2008 to an average of in the nine months ended September 30, 2009.

Collaborative research and development revenues decreased $1.4 million, or 52%, from $2.7 million in the nine months ended September 30, 2008 to $1.3 million in the nine months ended September 30, 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.

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Government grant revenues decreased $0.2 million, or 96%, from $0.3 million in the nine months ended September 30, 2008 to $11,000 in the nine months ended September 30, 2009.

Our top five customers accounted for 76% and 90% of our total revenues in the nine months ended September 30, 2008 and 2009, respectively. In the nine months ended September 30, 2008, Shell accounted for 57% of our total revenues. In the nine months ended September 30, 2009, Shell accounted for 75% of our total revenues.

Customers in the Americas accounted for 69% and 82% of our revenues, and customers outside the Americas accounted for 31% and 18% of our revenues, in the nine months ended September 30, 2008 and 2009, respectively. Revenues for the nine months ended September 30, 2008 and 2009 by geography were as follows (in thousands, except percentages):

	Nine Months Ended September 30,			
	2008	2009	$ Change	% Change
Americas(1)	$ 22,017	$ 48,110	$ 26,093	119%
Europe	5,934	6,146	212	4
Asia	3,929	4,414	485	12
International	9,863	10,560	697	7
Total	$ 31,880	$ 58,670	$ 26,790	84%

(1) Primarily United States.

Cost of Product Revenues. Cost of product revenues was $7.9 million for the nine months ended September 30, 2008, compared to $11.9 million in the nine months ended September 30, 2009, an increase of $4.0 million. The increase was primarily attributable to product sales. Cost of product revenues as a percentage of product revenues increased from 74% in the nine months ended September 30, 2008 to 89% in the nine months ended September 30, 2009, primarily due to write downs of $1.4 million of inventory items, as well as a change in sales mix towards lower margin product sales during the nine months ended September 30, 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 $33.3 million in the nine months ended September 30, 2008, compared to $39.5 million in the nine months ended September 30, 2009, an increase of $6.2 million or 19%. The increase was primarily due to increased royalty fees paid to Maxygen of $3.7 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 $2.5 million attributable to an increase in employee headcount in our research and development functions, and depreciation and amortization expense of $1.1 million due to expanded facilities and capital equipment. These costs were offset by reductions in supplies, consultants and other costs of $1.1 million. Research and development expenses included stock-based compensation expense of $1.0 million and $1.6 million during the nine months ended September 30, 2008 and 2009, respectively.

Selling, General and Administrative. Selling, general and administrative expenses were $28.3 million for the nine months ended September 30, 2008, compared to $20.9 million for the nine months ended September 30, 2009, a decrease of $7.4 million or 26%. The decrease was primarily due to a $3.6 million write off in 2008 of deferred initial public offering costs. We also incurred lower costs for consultants, contractors and outside advisory services of $1.7 million, and travel and recruiting-related expenses decreased by $0.9 million. Selling, general and administrative expenses included stock-based compensation expense of $1.3 million and $1.6 million during the nine months ended September 30, 2008 and 2009, respectively.

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Interest Income. Interest income was $1.4 million in the nine months ended September 30, 2008 compared to $0.1 million in the nine months ended September 30, 2009, a decrease of $1.3 million, or 90%. The decrease resulted from higher average cash, cash equivalents and marketable securities balances on hand and higher average interest rates during the first nine months of 2008 compared to the first nine months of 2009.

Interest Expense and Other, Net. Interest expense and other, net was $2.5 million in the nine months ended September 30, 2008, compared to $1.5 million in the nine months ended September 30, 2009, a decrease of $1.0 million or 39%. Interest expense and other, net in the nine months ended September 30, 2009 included the increase in the fair value of our redeemable convertible preferred stock warrants of $0.3 million, and a decrease in interest expense of $0.5 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. Interest expense and other, net in the nine months ended September 30, 2008 included the increase in the fair value of the redeemable convertible preferred stock warrants of $0.6 million, and higher interest expense due to higher debt obligations on the GE Capital Loan.

Provision for Income Taxes. The tax provision for the nine months ended September 30, 2008 and 2009 primarily consisted of foreign taxes withheld at source on royalties earned overseas and other 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 $0.2 million in employee severance and benefits and $0.5 million related to inventory write downs, for a total of $0.8 million. These costs were included in cost of product revenues in the consolidated statements of operations. As of September 30, 2009, $0.6 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 anticipate total costs of the plans to be approximately $1.4 million, with substantially all of the remaining $0.6 million (related to lease termination and employee severance and benefits) expected to be incurred by December 31, 2009.

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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

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 in 2007 to an average of 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.

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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 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

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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 general and administrative expenses in the consolidated statements of operations. As of December 31, 2008, $0.4 million has been paid and the remaining expenses are 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 the nine months ended September 30, 2009, $1.3 million was paid, and $0.1 million was reversed as reduction of general and administrative expense due to a change in estimated costs of restructuring. The amounts included in other accrual liabilities on the consolidated balance sheet as of September 30, 2009 under this restructuring plan were $0.1 million.

Years Ended December 31, 2006 and 2007

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).

	2006	2007	$ Change	% Change
Revenues:				
Product	$ 2,544	$ 11,418	$ 8,874	349%
Related party collaborative research and development	863	8,481	7,618	883
Collaborative research and development	8,403	4,733	(3,670)	(44)
Government grants	317	701	384	121
Total revenues	12,127	25,333	13,206	109
Costs and operating expenses:				
Cost of product revenues	1,806	8,319	6,513	361
Research and development	17,257	35,644	18,387	107
Selling, general and administrative	11,880	19,713	7,833	66
Total costs and operating expenses	30,943	63,676	32,733	106
Loss from operations	(18,816)	(38,343)	(19,527)	104
Interest income	742	1,491	749	101
Interest expense and other, net	(724)	(2,533)	(1,809)	250
Loss before income tax benefit	(18,798)	(39,385)	(20,587)	110
Income tax benefit	(127)	(408)	(281)	221
Net loss	$ (18,671)	$ (38,977)	$ (20,306)	109%

Revenues. From 2006 to 2007, revenues increased $13.2 million, or 109%, from $12.1 million to $25.3 million due primarily to increases in revenues from related party collaborative research and development projects and product sales.

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Product revenues increased $8.9 million, or 349%, from $2.5 million to $11.4 million in 2006 and 2007, respectively. This increase was primarily due to a $4.2 million increase in sales of our ATS-8 intermediate to manufacturers of generic atorvastatin, $1.7 million of additional sales from our new BioCatalytics subsidiary, and a $2.9 million increase in sales of our other biocatalyst and intermediate products.

Related party collaborative research and development revenues increased $7.6 million, or 883%, from $0.9 million to $8.5 million in 2006 and 2007, respectively. This increase was primarily due to the expanded research and development collaboration with Shell.

Collaborative research and development revenues decreased $3.7 million, or 44%, from $8.4 million to $4.7 million in 2006 and 2007, respectively. This decrease was primarily due to the reallocation of research and development resources to related party collaborative research and development projects.

Government grant revenues increased $0.4 million, or 121%, from $0.3 million to $0.7 million in 2006 and 2007, respectively. This increase was due to a $0.3 million grant received from the National Institutes of Health and an additional $0.1 million grant received from the German government.

Our top five customers accounted for 71% and 65% of total revenues for 2006 and 2007, respectively. In 2006, Pfizer accounted for 36% of our revenues and Schering-Plough accounted for 11% of our revenues. In 2007, Shell accounted for 33% of our revenues and Pfizer accounted for 13% of our revenues.

Customers in the Americas accounted for 65% and 59% of revenues, and customers outside the Americas accounted for 35% and 41% of revenues, in 2006 and 2007, respectively. Revenues for 2006 and 2007 by geography were as follows (in thousands, except for percentages):

	2006	2007	$ Change	% Change
Americas(1)	$ 7,933	$ 15,010	$ 7,077	89%
Europe	2,491	4,005	1,514	61
Asia	1,703	6,318	4,615	271
International	4,194	10,323	6,129	146
Total	$ 12,127	$ 25,333	$ 13,206	109%

(1) Primarily United States.

Cost of Product Revenues. Cost of product revenues was $1.8 million for 2006 compared to $8.3 million in 2007, an increase of $6.5 million, or 361%. The increase was primarily attributable to the increase in product sales of $8.9 million, an increase in amortization of intangible assets of $0.1 million and an inventory fair value adjustment related to our BioCatalytics acquisition of $0.2 million. Cost of product revenues as a percentage of product revenues increased from 71% in 2006 to 73% in 2007.

Research and Development. Research and development expenses were $17.3 million in 2006 compared to $35.6 million in 2007, an increase of $18.4 million, or 107%. The increase was primarily due to increased royalty costs of $7.3 million due to Maxygen in connection with amounts received from Shell relating to our biofuels research and development collaboration, and increased compensation (including stock-based compensation) benefits, hiring and training costs of $6.8 million attributable to an increase in employee headcount in our research and development functions. Also reflecting this increased research activity were higher expenses incurred for lab supplies, outside services and consultants of $2.2 million, plus higher occupancy related costs of $0.9 million and depreciation and amortization expense of $0.4 million. Travel and relocation expenses were also higher by $0.8 million as our research functions expanded in Europe and Asia. Professional and advisory fees also increased by $0.6 million. Included in the above amounts were $3.5 million of additional research and development expenses that we incurred after opening our new research facility in Singapore in October 2007. Research and development expenses included stock-based compensation expense of $3,000 and $0.5 million during 2006 and 2007, respectively.

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Selling, General and Administrative. Selling, general and administrative expenses were $11.9 million for 2006, compared to $19.7 million for 2007, an increase of $7.8 million, or 66%. The increase was primarily due to increased compensation (including stock-based compensation) of $2.8 million attributable to higher employee headcount. We incurred higher costs for consultants and outside advisory services of $1.5 million as we prepared to become a public company, including consulting costs associated with preparation for Sarbanes-Oxley compliance. We also incurred higher professional fees of $1.0 million in 2007 mainly for legal costs connected with negotiating our collaboration agreements and other contracts during the year. Expenses related to promotional marketing materials and travel increased $0.6 million. Selling, general and administrative expenses included stock-based compensation expense of $0.1 million and $0.8 million during 2006 and 2007, respectively.

Interest Income. Interest income was $0.7 million in 2006 compared to $1.5 million in 2007, an increase of $0.7 million, or 101%. The increase resulted from the higher average cash and investment balances on hand during 2007 compared to 2006. These higher cash and investment balances resulted from cash received in connection with the issuance of the Series E preferred stock, as well as from the $20.0 million up-front payment made by Shell when we entered into our five-year research and development collaboration.

Interest Expense and Other, Net. Interest expense and other, net was $0.7 million in 2006, compared to $2.5 million in 2007, an increase of $1.8 million, or 250%. Interest expense and other, net in 2007 included the increase in the fair value of our Series D redeemable convertible preferred stock warrants, which resulted in $1.3 million of expense, interest expense on our outstanding financing obligations, and losses from foreign currency transactions.

Income Tax Benefit. The income tax benefit for 2006 and 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.

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 September 30, 2009, our cash, cash equivalents and marketable securities totaled $56.0 million. In addition, we have $0.7 million of restricted cash primarily related to letters of credit.

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 do not expect to achieve profitability prior to at least 2011.

Our operating activities in the nine months ended September 30, 2009 used cash in the amount of $15.5 million, primarily as a result of our net loss of $15.1 million, decreases in deferred revenues of $4.4 million primarily as a result of continuing recognition of up-front exclusivity fees we received from

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Shell in 2007, and decreases in accounts payable and accrued liabilities of $3.2 million arising from the timing of payments to vendors. We also had net non-cash charges of $8.6 million, comprised primarily of $3.7 million in depreciation and amortization of property and equipment, $3.2 million in stock-based compensation expense, $0.7 million in amortization of intangible assets and $0.3 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 and accrued liabilities 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 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 the nine months ended September 30, 2009, our investing activities used cash of $24.7 million, primarily for the net purchases of $18.4 million of marketable securities, and $6.5 million of capital expenditures. These capital expenditures consisted primarily of laboratory equipment purchases and leasehold improvements in our laboratories.

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, the $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 $12.0 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.

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Financing Activities

In the nine months ended September 30, 2009, our financing activities provided $41.1 million in cash, primarily from the issuance and sale of 5.3 million shares of Series F preferred stock for $45.0 million, partially offset by $4.0 million in principal payments on our financing obligations. Subsequently, in November 2009, we issued 0.2 million additional shares of Series F preferred stock for $2.0 million.

Through our subsidiary, Jülich Fine Chemicals GmbH, we had a loan denominated in Euros with a German bank. The loan had a balance of 511,000 Euros (approximately $746,000 based on the Euro to U.S. dollar conversion at September 30, 2009) outstanding as of that date. In November 2009, in connection with the closure of our German operations, this balance was repaid.

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 6.1 million shares of Series E preferred stock and the exercise of warrants to purchase 0.4 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 September 30, 2009, we had financing obligations of $9.5 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 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, 2008 and September 30, 2009, we were either in compliance with the covenants of the loan and security agreement, or obtained from the lenders waivers of noncompliance. 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

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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, 2008 (in thousands):

	Total	2009	2010	2011	2012	2013 and beyond
Loans payable(1)	$ 15,769	$ 6,351	$ 5,975	$ 3,443	$	$
Capital leases(1)	78	45	33			
Operating leases	9,097	3,058	2,935	1,545	1,213	346
Total	$ 24,944	$ 9,454	$ 8,943	$ 4,988	$ 1,213	$ 346

(1) Amounts include interest on obligations.

The table above reflects only payment obligations that are fixed and determinable. Our commitments for operating leases primarily relates to our leased facilities in Redwood City, California, and Jülich, Germany. In connection with the plans approved and committed to by our board of directors during 2009 to reduce our cost structure, we intend to close our facility in Jülich, Germany. In this regard, we anticipate we will incur lease termination costs of $0.4 million by December 31, 2009.

In February 2006, Jülich Fine Chemicals GmbH entered into a line of credit agreement with a German bank, to be used for both equipment purchases and working capital requirements in the amount of $184,000. Prior to its acquisition, Jülich Fine Chemicals GmbH had entered a line of credit with a German bank, to be used for both equipment purchases and working capital requirements. No balances were outstanding on these lines of credit at December 31, 2008, and they were cancelled during 2009.

Off-Balance Sheet Arrangements

As of September 30, 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 for the interim reporting period ended September 30, 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.

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

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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 impact on our consolidated financial statements.

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 are 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 in the nine month period ended September 30, 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.

Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Sensitivity

We had unrestricted cash, cash equivalents and marketable securities totaling $84.1 million, $37.1 million and $56.0 million at December 31, 2007 and 2008 and September 30, 2009, respectively. 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,

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will reduce future investment income. If overall interest rates fell by 10% in 2008 and the nine months ended September 30, 2009, our interest income would have declined by approximately $0.1 million and $11,000, respectively, 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, Germany 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, 2008 and September 30, 2009, would have been a $0.3 million and $0.4 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.

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 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.

Solely 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 (i) our lack of policies and procedures, with the associated internal controls, to appropriately address complex, non-routine transactions and (ii) the lack of a sufficient number of qualified personnel to timely account for such transactions in accordance with U.S. generally accepted accounting principles.

We and our independent registered public accounting firm identified the following issues during the audit, which collectively gave rise to the conclusion that we had an underlying material weakness:

- inadequate policies to address the increasingly complex revenue arrangements that we enter into;

- failure to correctly and timely identify all data required to evaluate the accounting impact of stock option grants and to recognize all requirements under applicable accounting standards;

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accounting issues that arose in connection with two acquisitions;

improper recording of foreign currency cumulative translation adjustments; and

failure to effectively track and value inventory.

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.

Solely in connection with the audit of our consolidated financial statements for 2008, we and our independent registered public accounting firm identified a material weakness and two significant deficiencies in our internal control over financial reporting. The material weakness 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. We and our independent registered public accounting firm identified the following issues during the audit, which collectively gave rise to the conclusion that we had an underlying material weakness:

duplicative accrual relating to legal expenses in our accounting records;

incorrect inputs relating to the Black-Scholes calculation of fair value of non-employee stock options and warrants;

under accrual of expenses for tax consulting work;

incorrect input of costs eligible for reimbursement under a license agreement;

errors in the valuation of inventory; and

failure to accrue penalties associated with foreign filing requirements.

We and our independent registered public accounting firm also identified two significant deficiencies in our internal control over financial reporting relating to (i) misapplication of U.S. generally accepted accounting principles and (ii) an ineffective contract compliance process. The material weakness and significant deficiencies resulted in the recording of numerous audit adjustments.

Notwithstanding the material weaknesses described above, we have performed additional analyses and other procedures to enable management to conclude that our consolidated financial statements included in this filing were prepared in accordance with U.S. generally accepted accounting principles.

We have not yet been able to remediate the deficiencies identified in these audits. However, we have taken numerous steps and plan to take additional significant steps intended to address the underlying causes of the material weaknesses and significant deficiencies in the immediate future, primarily through the development and implementation of formal 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 all of the control deficiencies underlying these material weaknesses and significant deficiencies. In addition, we may incur significant incremental costs associated with this remediation, primarily due to the procurement, implementation and validation of robust accounting and financial reporting systems, the hiring of additional finance and accounting personnel and the continued use of third-party experts and contractors to assist us.

If we fail to enhance our 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.

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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 September 30, 2009, Maxygen beneficially owned approximately 21.6% 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 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

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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

biocatalysts for the production of ATS-5, which Pfizer purchases as their 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 cellulosic biomass-derived 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. 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.

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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 2008, 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

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. For example, in August 2008, we entered into an expanded supply relationship with Arch for the manufacture of intermediates and APIs for specified pharmaceutical products.

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 prescription drugs 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.

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

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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. 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 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

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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.

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.

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.

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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.

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. 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.

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Our Biofuels Business

Industry Overview Need for Petroleum Replacement

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.

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 45% of this demand has been refined into liquid transportation fuels for use in automobiles. There is enormous potential to replace a substantial portion of petroleum-based liquid transportation fuels with high-quality, energy-rich fuels produced through biocatalyst-enabled transformation of renewable cellulosic biomass sources. For instance, the U.S. Congress passed the Energy Independence and Security

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Act of 2007, an alternative fuels mandate that calls for 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. This mandate requires that of the 36 billion gallons, 21 billion gallons must be advanced biofuels. 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 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;

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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