Synthetic Biologics, Inc.
Form 424B3
November 15, 2012

Filed Pursuant to Rule 424(b)(3)

Registration Statement No. 333-180562

November 15, 2012

PROSPECTUS SUPPLEMENT NO. 10

SYNTHETIC BIOLOGICS, INC.

112,573 Shares of Common Stock

This prospectus supplement amends and supplements our prospectus, dated July 26, 2012 relating to the resale, from time to time, of up to 112,573 shares of common stock of Synthetic Biologics, Inc. upon the exercise of warrants issued in July 2011 at an exercise price of $1.00 per share and warrants sold in our July 2010 offering at an exercise price of $1.32 per share. We will receive proceeds if the warrants are exercised for cash; to the extent we receive such proceeds, they will be used for working capital purposes.

Our common stock became eligible for trading on the NYSE MKT October 16, 2008. Our common stock is eligible for quotation on the NYSE MKT under the symbol “SYN”. The closing price of our stock on November 14, 2012 was $2.09.

This prospectus supplement is being filed to include the information set forth in the Quarterly Report on Form 10-Q filed on November 14, 2012, which is set forth below. This prospectus supplement should be read in conjunction with the prospectus dated July 26, 2012, supplement no. 1 dated August 9, 2012, prospectus supplement no. 2 dated August 15, 2012, prospectus supplement no. 3 dated August 15, 2012, prospectus supplement no. 4 dated September 12, 2012, prospectus supplement no. 5 dated October 9, 2012, prospectus supplement no. 6 dated October 17, 2012, prospectus supplement no. 7 dated November 1, 2012, prospectus supplement no. 8 dated November 14, 2012; and prospectus supplement no. 9 dated November 15, 2012 which are to be delivered with this prospectus supplement.

Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page 4 of the original prospectus for more information.

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

The date of this Prospectus Supplement No. 10 is November 15, 2012.

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549

FORM 10-Q

(Mark One)

S **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2012

OR

£ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES ACT OF 1934**

For the transition period from _____ to _____

Commission File Number: 1-12584

SYNTHETIC BIOLOGICS, INC.

(Name of small business issuer in its charter)

Nevada	**13-3808303**
(State or other jurisdiction of incorporation or organization)	*(IRS Employer Identification Number)*
617 Detroit Street, Suite 100 **Ann Arbor, MI**	**48104**
(Address of principal executive offices)	*(Zip Code)*

Registrant's telephone number, including area code:

(734) 332-7800

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

Common Stock, $0.001 par value per share

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

None.

(Title of Class)

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated file, a non-accelerated file, 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. (Check one):

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

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

As of November 12, 2012, the registrant had 43,697,748 shares of common stock outstanding.

SYNTHETIC BIOLOGICS, INC.

FORM 10-Q

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PART I.—FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

Synthetic Biologics, Inc. and Subsidiaries

Consolidated Balance Sheets

(In thousands, except share data)

Assets	September 30, 2012 (Unaudited)	December 31, 2011
Current Assets:		
Cash and cash equivalents	$ 4,577	$6,678
Accounts receivable - net	122	405
Other	151	16
Assets of discontinued operations	—	23
Total Current Assets	4,850	7,122
Property and equipment, net	249	323
Long-term note receivable	700	—
Deposits and other assets	27	31
Total Assets	$ 5,826	$7,476
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable	$ 390	$388
Accrued liabilities	27	29
Total Current Liabilities	417	417
Total Liabilities	417	417
Stockholders' Equity:		
Preferred stock, $0.001 par value; 10,000,000 shares authorized,		

none issued and outstanding	—	—
Common stock, $0.001 par value; 100,000,000 shares authorized, 33,477,020 issued and 33,395,538 outstanding in 2012 and 31,374,002 issued and 31,292,520 outstanding in 2011	33	31
Additional paid-in capital	62,251	58,901
Accumulated deficit	(56,875)	(51,873)
Total Stockholders' Equity	5,409	7,059
Total Liabilities and Stockholders' Equity	$ 5,826	$ 7,476

See accompanying notes to unaudited consolidated financial statements.

Synthetic Biologics, Inc. and Subsidiaries

Consolidated Statements of Operations

(In thousands, except share data)

(Unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2012	2011	2012	2011
Operating Costs and Expenses:				
General and administrative	$1,073	$582	$3,717	$2,339
Research and development	763	289	1,696	801
Total Operating Costs and Expenses	1,836	871	5,413	3,140
Loss from Continuing Operations	(1,836)	(871)	(5,413)	(3,140)
Other Income (Expense):				
Warrant expense	—	—	—	(1,492)
Change in fair value of warrant liability	—	(165)	—	(242)
Other income	10	6	22	55
Total Other Income (Expense), net	10	(159)	22	(1,679)
Net Loss from Continuing Operations	(1,826)	(1,030)	(5,391)	(4,819)
Net Income (Loss) from Discontinued Operations	(104)	(68)	389	(145)
Net Loss and Comprehensive Loss	$(1,930)	$(1,098)	$(5,002)	$(4,964)
Net Income (Loss) Per Share - Basic and Dilutive:				
Continuing operations	$(0.05)	$(0.04)	$(0.16)	$(0.18)
Discontinued operations	—	—	0.01	—
Net Loss Per Share	$(0.05)	$(0.04)	$(0.15)	$(0.18)
Weighted average number of shares outstanding during the period - Basic and Dilutive	33,383,226	28,089,492	32,801,415	27,075,730

See accompanying notes to unaudited consolidated financial statements

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Synthetic Biologics, Inc. and Subsidiaries

Consolidated Statements of Cash Flows

(In thousands)

(Unaudited)

	Nine months ended September 30,	
	2012	2011
Cash Flows From Operating Activities:		
Net loss	$(5,002)	$(4,964)
Adjustments to reconcile net loss to net cash used in operating activites:		
Stock-based compensation	1,303	483
Stock option modification expense	—	398
Stock issued as employee compensation	—	76
Stock issued for consulting fees	—	165
Warrant expense	—	1,492
Change in fair value of warrant liability	—	242
Depreciation	51	133
Provision for uncollectible accounts receivable	269	254
Gain on sale of discontinued operations	(677)	—
Loss on sale of equipment	—	6
Impairment on loss of equipment	30	—
Gain on the settlement of accounts payable	—	(63)
Changes in operating assets and liabilities:		
Accounts receivable	14	(411)
Other current assets	(135)	220
Deposits and other assets	4	58
Accounts payable	2	(40)
Accrued liabilities	(2)	(169)
Liabilities of discontinued operations	—	(24)
Net Cash Used In Operating Activities	(4,143)	(2,144)
Cash Flows From Investing Activities:		
Purchase of short term investments	—	(2,866)
Purchase of capital equipment	(7)	—
Proceeds from the sale of equipment	—	1
Net Cash Used In Investing Activities	(7)	(2,865)
Cash Flows From Financing Activities:		
Proceeds from issuance of common stock for stock option exercises	94	8
Proceeds from issuance of common stock for warrant exercises	1,955	—

Proceeds from issuance of common stock , net offering costs $296	—	6,961
Net Cash Provided By Financing Activities	2,049	6,969
Net increase (decrease) in cash	(2,101)	1,960
Cash at beginning of period	6,678	2,649
Cash and cash equivalents at end of period	$4,577	$4,608
Supplemental disclosures of cash flow information:		
Cash paid for interest	$—	$—
Cash paid for taxes	$—	$—

See accompanying notes to unaudited consolidated financial statements

Synthetic Biologics, Inc. and Subsidiaries

Notes to Consolidated Financial Statements

(Unaudited)

1. Organization

Synthetic Biologics, Inc. (the "Company" or "Synthetic Biologics"), formerly Adeona Pharmaceuticals, Inc., is a biotechnology company focused on the development of synthetic biologics and innovative medicines for serious infections and diseases. The Company is developing a series of monoclonal antibodies (mAbs) for the treatment of certain infectious diseases and a synthetic DNA-based therapy for the treatment of pulmonary arterial hypertension (PAH). In addition, Synthetic Biologics is developing a product candidate to treat relapsing-remitting multiple sclerosis (MS) and cognitive dysfunction in MS; designing a clinical development pathway for the treatment of amyotrophic lateral sclerosis (ALS); and, has partnered the development of a treatment for fibromyalgia. The Company is also evaluating additional in-licensing opportunities.

Therapeutic Area	Product Candidate	Status
Acinetobacter infection	SYN-001 (monoclonal antibody)	Discovery; Collaboration with Intrexon
Infectious disease*	SYN-002 (monoclonal antibody)	Discovery; Collaboration with Intrexon
Infectious disease*	SYN-003 (monoclonal antibody)	Discovery; Collaboration with Intrexon
PAH	SYN-PAH (synthetic DNA-based therapy)	Preclinical; Collaboration with Intrexon
Relapsing-remitting MS	Trimesta (oral estriol)	Patients fully enrolled in Phase II clinical trial; dosing and monitoring underway
Cognitive dysfunction in MS	Trimesta (oral estriol)	Patient enrollment underway in Phase II clinical trial
ALS	AEN-100 (gastroretentive zinc acetate)	Clinical trial design ongoing
Fibromyalgia	Effirma (oral flupirtine)	Partnered with Meda AB

*Infectious disease targets to be disclosed in the future.

2. Basis of Presentation

The accompanying consolidated financial statements have been prepared pursuant to the rules and regulations of Securities and Exchange Commission ("SEC") for interim financial information. Accordingly they do not include all of the information and notes required by U.S. GAAP for complete financial statements. The accompanying consolidated financial statements include all adjustments, composed of normal recurring adjustments, considered necessary by management to fairly state our results of operations, financial position and cash flows. The operating results for the interim periods are not necessarily indicative of results that may be expected for any other interim period or for the full year. These consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto included in our Annual Report on Form 10-K/A for the year ended December 31, 2011 ("2011 Form 10-K") as filed with the SEC. The interim results for the three and nine months ended September 30, 2012, are not necessarily indicative of results for the full year.

The consolidated financial statements are prepared in conformity with U.S. GAAP, which requires the use of estimates, judgments and assumptions that affect the amounts of assets and liabilities at the reporting date and the amounts of revenue and expenses in the periods presented. We believe that the accounting estimates employed are appropriate and the resulting balances are reasonable; however, due to the inherent uncertainties in making estimates actual results could differ from the original estimates, requiring adjustments to these balances in future periods.

3. Discontinued Operations of Adeona Clinical Laboratory and Note Receivable

On March 8, 2012, the Company sold all of its interest in Adeona Clinical Laboratory, LLC (the "Lab") to Hartlab, LLC, an entity controlled by the Lab's former owner. In connection with the sale of the Lab, the consideration received was (i) the immediate assignment of the Lab's outstanding accounts receivable up through the date of closing, plus (ii) $700,000 payable pursuant to the terms of a two-year promissory note bearing interest at 5.7% per annum secured by all of the assets of the Lab. The note and all unpaid interest are due on March 1, 2014.

In accordance with ASC Topic 205-20 " *Presentation of Financial Statements—Discontinued Operations* " (ASC 205-20), the Company determined that all the criteria had been met and classified the Lab as discontinued operations and its results of operations, financial position and cash flows are separately reported for all periods presented. The assets of the discontinued operations are presented separately under the caption "Assets of discontinued operations" in the accompanying Consolidated Balance Sheets at September 30, 2012, and December 31, 2011, and consist of the following *(in thousands):*

	September 30, 2012	December 31, 2011
Assets of discontinued operations:		
Property and equipment, net	$ —	$ 23
Total assets	$ —	$ 23

The summarized statement of operations data for Adeona Clinical Laboratory for the three and nine months ended September 30, 2012 and 2011 are as follows *(in thousands):*

	Three months ended September 30,		Nine months ended September 30,	
	2012	2011	2012	2011
Laboratory fees, net	$—	$293	$115	$972
Operating Costs and Expenses:				
General and administrative	104	100	287	311
Cost of laboratory services	—	261	116	806
Total operating costs and expenses	104	361	403	1,117
Income (loss) from discontinued operations	(104)	(68)	(288)	(145)
Other Income:				
Gain on sale of Adeona Clinical Laboratory	—	—	677	—

Net income (loss) from discontinued operations	$(104)	$(68)	$389	$(145)

4. Fair Value of Financial Instruments

The fair value accounting standards define fair value as the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is determined based upon assumptions that market participants would use in pricing an asset or liability. Fair value measurements are rated on a three-tier hierarchy as follows:

- Level 1 inputs: Quoted prices (unadjusted) for identical assets or liabilities in active markets;
- Level 2 inputs: Inputs, other than quoted prices included in Level 1 that are observable either directly or indirectly; and
- Level 3 inputs: Unobservable inputs for which there is little or no market data, which require the reporting entity to develop its own assumptions.

If the inputs used to measure fair value fall in different levels of the fair value hierarchy, the hierarchy level is based upon the lowest level of input that is significant to the fair value measurement.

Cash and cash equivalents include money market accounts and mutual funds of $4.5 million and $5.0 million as of September 30, 2012 and December 31, 2011, respectively, that are measured using Level 1 inputs.

5. Selected Balance Sheet Information

Accounts receivable consisted of the following at September 30, 2012 and December 31, 2011 *(in thousands):*

	September 30, 2012	December 31, 2011
Accounts receivable	$ 682	$ 692
Bad debt allowance - customer	(560)	(287)
Accounts receivable, net	$ 122	$ 405

Property and Equipment consisted of the following at September 30, 2012, and December 31, 2011 *(in thousands)* :

	September 30, 2012	December 31, 2011
Manufacturing equipment	$ 335	$ 400
Computer and office equipment	32	159
Laboratory equipment	133	136
Total	500	695
Less accumulated depreciation	(251)	(372)
Property and equipment, net	$ 249	$ 323

Depreciation expense for the nine months ended September 30, 2012 and 2011 was approximately $51,000 and $133,000, respectively.

6. Stock-Based Compensation

During 2001, Pipex Therapeutics' Board of Directors and stockholders adopted the 2001 Stock Incentive Plan (the "2001 Stock Plan"). This plan was assumed by Pipex in the October 2006 merger with Sheffield. As of the date of the merger, there were 1,489,353 options issued and outstanding under the 2001 plan. The total number of shares of stock with respect to which stock options and stock appreciation rights may be granted to any one employee of the Company or a subsidiary during any one-year period under the 2001 plan shall not exceed 250,000. All awards pursuant to the 2001 Stock Plan shall terminate upon the termination of the grantee's employment for any reason. Awards include options, restricted shares, stock appreciation rights, performance shares and cash-based awards (the "Awards"). The 2001 Stock Plan contains certain anti-dilution provisions in the event of a stock split, stock dividend or other capital adjustment, as defined in the plan. The 2001 Stock Plan provides for a Committee of the Board to grant awards and to determine the exercise price, vesting term, expiration date and all other terms and conditions of the awards, including acceleration of the vesting of an award at any time. As of September 30, 2012, there were 1,066,007 options issued and outstanding under the 2001 Stock Plan.

On March 20, 2007, the Company's Board of Directors approved the Company's 2007 Stock Incentive Plan (the "2007 Stock Plan") for the issuance of up to 2,500,000 shares of common stock to be granted through incentive stock options, nonqualified stock options, stock appreciation rights, dividend equivalent rights, restricted stock, restricted stock units and other stock-based awards to officers, other employees, directors and consultants of the Company and its subsidiaries. This plan was approved by stockholders on November 2, 2007. The exercise price of stock options under the 2007 Stock Plan is determined by the compensation committee of the Board of Directors, and may be equal to or greater than the fair market value of the Company's common stock on the date the option is granted. The total number of shares of stock with respect to which stock options and stock appreciation rights may be granted to any one employee of the Company or a subsidiary during any one-year period under the 2001 plan shall not exceed 250,000. Options become exercisable over various periods from the date of grant, and generally expire ten years after the grant date. As of September 30, 2012, there are 912,739 options issued and outstanding under the 2007 Stock Plan.

On November 2, 2010, the Board of Directors and stockholders adopted the 2010 Stock Incentive Plan ("2010 Stock Plan") for the issuance of up to 3,000,000 shares of common stock to be granted through incentive stock options, nonqualified stock options, stock appreciation rights, dividend equivalent rights, restricted stock, restricted stock units and other stock-based awards to officers, other employees, directors and consultants of the Company and its subsidiaries. The exercise price of stock options under the 2010 Stock Plan is determined by the compensation committee of the Board of Directors, and may be equal to or greater than the fair market value of the Company's common stock on the date the option is granted. Options become exercisable over various periods from the date of grant, and generally expire seven to ten years after the grant date. As of September 30, 2012, there are 2,280,000 options issued and outstanding under the 2010 Stock Plan.

In the event of an employee's termination, the Company will cease to recognize compensation expense for that employee. There is no deferred compensation recorded upon initial grant date, instead, the fair value of the stock-based payment is recognized ratably over the stated vesting period.

The Company has applied fair value accounting for all stock-based payment awards since inception. The fair value of each option or warrant granted is estimated on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes assumptions used in the months ended September 30, 2012 and 2011 are as follows:

	Three Months Ended September 30,		**Nine Months Ended September 30,**	
	2012	**2011**	**2012**	**2011**
Exercise price	$1.96 – $2.27	$0.64 – $0.87	$1.70 – $2.47	$0.64 – $2.22
Expected dividends	0%	0%	0%	0%
Expected volatility	153%	177% – 180%	108% – 174%	177% – 188%
Risk free interest rates	0.63% – 0.65%	1.40% – 2.17%	0.37% – 1.98%	1.40% – 3.58%
Expected life options	5 years – 10 years	7 years	5 years – 10 years	5 years – 7 years
Expected forfeitures	0%	0%	0%	0%

The Company records stock-based compensation based upon the stated vested provisions in the related agreements, with recognition of expense recorded on the straight line basis over the term of the related agreement. The vesting provisions for these agreements have various terms as follows:

immediate vesting,
one-half vesting immediately and the remainder over three years
monthly over three years,
quarterly over three years,
annually over three years,
one-third immediate vesting and remaining annually over two years,
one-eighth immediate vesting with remaining vesting over two years,
one-half immediate vesting with remaining vesting over nine months; and
one-quarter immediate vesting with the remaining over three years.

During the nine months ended September 30, 2012, the Company granted 1,840,000 options to employees and consultants having a fair value of approximately $4.0 million based upon the Black-Scholes option pricing model. During the same period of 2011, the Company granted 377,002 options to employees having a fair value of approximately $475,000 based upon the Black-Scholes option pricing model.

A summary of stock option activities as of September 30, 2012, and for the year ended December 31, 2011, is as follows:

	Number of Options Outstanding	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value
Balance – December 31, 2010	2,539,091	$ 1.32		
Granted	557,002	1.26		
Exercised	(23,333)	0.57		$20,000
Forfeited or expired	(93,750)	0.59		
Balance – December 31, 2011	2,979,010	1.34		
Granted	1,840,000	2.24		
Exercised	(334,851)	0.28		$625,000

Forfeited or expired	(225,413)	2.37		
Balance – September 30, 2012 – outstanding	4,258,746	$ 1.76	6.77 years	$1,980,000
Balance – September 30, 2012 – exercisable	2,620,784	$ 1.56	5.85 years	$1,660,000

The weighted-average grant-date fair value of options granted during the nine months ended September 30, 2012 and 2011 was $2.20 and $1.26, respectively.

During the nine months ended September 30, 2012 and 2011, 334,851 and 10,000 stock options were exercised, respectively.

The Company recognized $395,000 and $60,000 in stock-based compensation expense relating to stock options during the three months ended September 30, 2012 and 2011, respectively, and $1.3 million and $894,000 during the nine months ended September 30, 2012 and 2011, respectively.

As of September 30, 2012, total unrecognized stock-based compensation expense related to stock options was $3.3 million, which is expected to be expensed through August 2015.

7. Stock Purchase Warrants

On March 15, 2012, the Company entered into a consulting agreement for a financial communications program, for a period of twelve months that began on February 20, 2012. As compensation for such program, the consultant is paid a monthly fee and will be issued a performance warrant exercisable for 250,000 shares of the Company’s common stock based on achievement of certain stock price milestones. Upon initiation of the program, 50,000 of the performance warrants will vest. The performance warrant is exercisable for a period of two years from the date of issuance for an exercise price equal to the price of the Company’s common stock on the date of execution. The expense recorded for the nine months ended September 30, 2012 approximated $63,000 and was estimated using the Monte Carlo valuation model. The assumptions used by the Company are summarized in the following table:

Exercise price	$2.20	
Expected dividends	0	%
Expected volatility	110	%
Risk free interest rate	0.26	%
Expected life of warrant	2 years	

On December 20, 2011, the Company entered into a consulting agreement for financial advisory services, for a period of twelve months. As compensation for such services, the consultant is paid a monthly fee and on February 2, 2012, was issued a warrant exercisable for 100,000 shares of the Company's common stock. The warrant is exercisable upon issuance for a period of five years from the date of issue at an exercise price equal to the price of the Company's common stock on the date of issue. The fair value of the warrant approximated $200,000 and was measured using the Black-Scholes valuation model. The assumptions used by the Company are summarized in the following table:

Exercise price	$1.14	
Expected dividends	0	%
Expected volatility	174	%
Risk free interest rate	0.71	%
Expected life of warrant	5 years	

On April 6, 2011, the Company entered into a Common Stock Purchase Agreement with an institutional investor. As part of this agreement, the Company issued a warrant to purchase 844,391 shares of common stock. The warrants have an exercise price of $1.00 and a life of fifteen months. The warrants vested immediately and all warrants were exercised.

On January 28, 2011, the Company entered into a Common Stock Purchase Agreement with three institutional investors. As part of this agreement, the Company issued warrants to purchase 1,428,572 shares of common stock. The warrants have an exercise price of $1.40 and a life of fifteen months. The warrants vested immediately and all warrants were exercised.

On July 2, 2010, the Company entered into a Common Stock Purchase Agreement with a single investor. As part of this agreement, the Company issued warrants to purchase 60,606 shares of common stock to the placement agent, or its permitted assigns. The warrants have an exercise price of $1.32 and a life of five years. The warrants vested on January 1, 2011 and expire December 31, 2015. Since these warrants were granted as part of an equity raise, the Company has treated them as a direct offering cost. The result of the transaction has no affect to equity. As of September 30, 2012, there were 18,182 warrants outstanding.

A summary of warrant activities as of September 30, 2012, and for the year ended December 31, 2011, is as follows:

	Warrants	Weighted Average Exercise Price
Balance – December 31, 2010	1,131,078	$ 3.49
Granted	2,272,963	1.25
Exercised	(15,615)	1.03
Expired	(129,240)	2.08
Balance – December 31, 2011	3,259,186	1.99
Granted	350,000	1.90
Exercised	(1,768,167)	1.11
Cancelled by cashless exercise	(516,917)	1.40
Balance – September 30, 2012 – outstanding	1,324,102	$ 3.25
Balance – September 30, 2012 – exercisable	1,124,102	$ 3.44

The Company recognized $1,000 and $165,000 in compensation expense relating to stock purchase warrants for the three months ended September 30, 2012 and 2011, respectively, and $271,000 and $1.7 million for the nine months ended September 30, 2012 and 2011, respectively.

The warrants outstanding as of September 30, 2012, are as follows:

Exercise Price	Warrants Outstanding	Warrants Exercisable	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value
$ 1.14	100,000	100,000	4.34 years	$ 94,000
$ 1.32	18,182	18,182	3.25 years	14,000
$ 2.20	250,000	50,000	1.45 years	-
$ 2.22	517,257	517,257	4.16 years	-
$ 3.30	61,207	61,207	2.66 years	-
$ 3.75	50,000	50,000	3.38 years	-
$ 6.36	327,456	327,456	0.11 years	-
	1,324,102	1,124,102	2.58 years	$ 108,000

8. Stockholders' Equity

During the nine months ended September 30, 2012, the Company issued 334,851 shares of common stock, in connection with the exercise of stock options, for proceeds of approximately $94,000. The Company also issued 1,768,167 shares of common stock in connection with the exercise of warrants, for proceeds of approximately $2.0 million.

9. Recent Accounting Pronouncements

There were no accounting standards or interpretations issued or recently adopted that are expected to have a material impact on the Company's financial position, operations, or cash flows.

10. Subsequent Events

Intrexon Collaboration for Infectious Diseases

On October 16, 2012, a closing was held for the transaction previously announced on August 8, 2012 between the Company and Intrexon Corporation ("Intrexon"). The Company issued 3,552,210 shares of Company common stock, $0.001 par value, which issuance is also deemed paid in partial consideration for the execution and delivery of the Exclusive Channel Collaboration Agreement, dated August 6, 2012, between the Company and Intrexon. The offer

and issuance of such shares of common stock have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), and therefore may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. For this issuance, the Company is relying on the exemption from federal registration under Section 4(2) and Regulation D of the Securities Act, based on the Company's belief that the offer and sale of such shares of common stock does not involve a public offering as Intrexon is an "accredited investor" as defined under Section 501 promulgated under the Securities Act and no general solicitation has been involved in the offering. The Company will record research and development expense of $7.6 million, the fair value of these shares based on the quoted closing trading price of $2.15 per share.

Private Placement Financing

On October 25, 2012, the Company entered into a Stock Purchase Agreement (the "Purchase Agreement") with certain accredited investors (the "Purchasers"), pursuant to which the Company agreed to sell to the Purchasers in a private placement an aggregate of 6,750,000 shares of the Company's common stock at a price per share of $1.60 (the "Common Shares") for aggregate gross proceeds of $10.8 million and net proceeds of $10.1 million (the "Offering"). On October 30, 2012, the Company completed the Offering. The Company intends to use the net proceeds from the Offering to develop its monoclonal antibody and synthetic DNA programs through its Exclusive Channel Collaborations with Intrexon Corporation, and for general corporate purposes, including the execution of its business plan and expansion of its pipeline.

In connection with the Offering, the Company also entered into a registration rights agreement with certain of the Purchasers (the "Registration Rights Agreement"). The Registration Rights Agreement requires that the Company file a registration statement (the "Initial Registration Statement") with the Securities and Exchange Commission (the "SEC") within forty-five (45) days of the closing date of the Offering (the "Filing Date") for the resale by the Purchasers of all of the Common Shares owned by such Purchasers and all shares of Common Stock issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect thereto (the "Registrable Securities"). The Initial Registration Statement must be declared effective by the SEC within ninety (90) days of the closing date of the Offering (the "Effectiveness Date") subject to certain adjustments. Upon the occurrence of certain events (each an "Event"), including, but not limited to, that the Initial Registration Statement is not filed prior to the Filing Date, the Company will be required to pay to each of the Purchasers liquidated damages of 1.5% of their aggregate purchase price upon the date of the Event and then monthly thereafter until the Event is cured. In no event will the aggregate amount of liquidated damages payable to each of the Purchasers exceed in the aggregate 10% of the aggregate purchase price paid by such Purchaser for the Registrable Securities.

In connection with the Offering, the Company also entered into an agreement with a certain Purchaser that is an affiliate of Intrexon Corporation (the "Joinder Agreement") pursuant to which such Purchaser agreed to be bound by the terms of and join Intrexon Corporation as a party to its registration rights agreement with the Company entered into in connection with the Exclusive Channel Collaboration Agreement between the Company and Intrexon Corporation dated August 6, 2012.

Griffin Securities, Inc. (the "Placement Agent") served as the placement agent for the Offering. In consideration for services rendered as the Placement Agent in the Offering, the Company agreed to (i) pay to the Placement Agent cash commissions equal to 6.0% of the gross proceeds received in the Offering, (ii) issue to the Placement Agent, or its designee, a five-year warrant to purchase up to 635,855 shares of the Company's common stock with an exercise price of $1.60 per share (the "Placement Agent Warrant") and (iii) reimburse the Placement Agent for its reasonable actual out-of-pocket expenses incurred in connection with the Offering, including reasonable legal fees and disbursements. The Placement Agent Warrant also provides for the same registration rights and obligations, and is subject to certain limitations, as set forth in the Registration Rights Agreement with respect to the Common Shares underlying such warrant.

The fair value of the warrant approximated $1.4 million and was measured using the Black-Scholes valuation model. The assumptions used by the Company are summarized in the following table:

Exercise price	$1.60
Expected dividends	0%
Expected volatility	153%
Risk free interest rate	0.82%
Expected life of warrant	5 years

Agreement to Acquire C. difficile Clinical-stage Program

On November 8, 2012, the Company entered into an Asset Purchase Agreement (the "Agreement") with Prev ABR LLC ("Prev"), pursuant to which the Company has the right to acquire the *C. diff* program assets of Prev, including pre-Investigational New Drug (IND) package, Phase I and Phase II clinical data, manufacturing process data and all issued and pending U.S. and international patents. Pursuant to the Agreement, the Company paid Prev an initial cash payment of $100,000 upon execution of the Agreement and subject to closing conditions anticipated to occur within 30 days, the Company will pay an additional payment $135,000 in cash and 625,000 unregistered shares of the Company's common stock to Prev. In addition, upon the achievement of the milestones set forth below, Prev may be entitled to receive additional consideration payable 50% in cash and 50% in stock of the Company, subject to Prev's option to receive the entire payment in shares of the Company's stock, with the exception of the first milestone payments to be paid in cash: (i) upon commencement of an IND; (ii) upon commencement of a Phase I clinical trial; (iii) upon commencement of a Phase II clinical trial; (iv) upon commencement of a Phase III clinical trial; (v) upon Biologic License Application (BLA) filing in the U.S. and for territories outside of the U.S. (as defined in the Agreement); and, (vi) upon BLA approval in the U.S. and upon approval in territories outside the-U.S. The Agreement and stock issuances are subject to prior approval of the NYSE MKT, LLC. The Agreement is subject to certain due diligence obligations and no royalties are payable to Prev under the Agreement.

The Agreement provides for termination prior to closing: (i) upon the mutual agreement of the parties; (ii) by Prev if the closing has not occurred within thirty (30) days of the execution of the Agreement; provided that such failure to close is not due to the failure of Prev to fulfill its obligations under the Agreement or Prev has not been the cause of such failure, or (iii) by the Company at any time. If the Agreement is terminated by the Company then the Company shall be entitled to receive a refund of half of its initial cash payment, in addition to any fees paid by the Company on behalf of Prev and if such termination is due to the failure of Prev to fulfill its obligations under the Agreement or a breach of a representation or warranty of Prev then the Company shall be entitled to a refund of the entire cash payment in addition to any fees paid by the Company on behalf of Prev.

The Agreement also provides that Prev has a right to the return to it of all assets acquired by the Company under the Agreement if on or prior to the date that is (i) thirty (30) months after the execution of the Agreement, the Company has not initiated toxicology studies in non-rodent models or (ii) thirty six (36) months have not filed an IND under the program related to the assets and such failure is not due to action or inaction of Prev or breach of its representations or warranties or covenants or if there is a change of control as defined in the Agreement and after such change of control the assets are not further developed; provided however that such thirty (30) and thirty six (36) month periods can be extended by the Company for an additional twelve (12) months upon payment of a cash milestone payment.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL INFORMATION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with the attached unaudited consolidated financial statements and notes thereto, and with our audited consolidated financial statements and notes thereto for the fiscal year ended December 31, 2011, found in our Annual Report on Form 10-K/A. In addition to historical information, the following discussion contains forward-looking statements that involve risks, uncertainties and assumptions. Where possible, we have tried to identify these forward looking statements by using words such as "anticipate," "believe," "intends," or similar expressions. Our actual results could differ materially from those anticipated by the forward-looking statements due to important factors and risks including, but not limited to, those set forth under "Risk Factors" in this 10-Q and as applicable in Part I, Item 1A of our Annual Report on Form 10-K/A.

Overview

We are a biotechnology company focused on the development of synthetic biologics and innovative medicines for serious infections and diseases. We are developing a series of monoclonal antibodies (mAbs) for the treatment of certain infectious diseases and a synthetic DNA-based therapy for the treatment of pulmonary arterial hypertension (PAH). In addition, we are developing a product candidate to treat relapsing-remitting multiple sclerosis (MS) and cognitive dysfunction in MS; designing a clinical development pathway for the treatment of amyotrophic lateral sclerosis (ALS); and, have partnered the development of a treatment for fibromyalgia. We are also evaluating additional in-licensing opportunities.

Product Pipeline:

Infectious Disease Programs:

- In August 2012, we entered into a second worldwide exclusive channel collaboration with Intrexon Corporation (Intrexon) through which we intend to develop and commercialize a series of mAb therapies for the treatment of certain infectious diseases not adequately addressed by existing therapies. Utilizing Intrexon's comprehensive suite of proprietary technologies, including the mAbLogix™ and LEAP™ platforms, we intend to target three infectious disease

indications as part of the Intrexon collaboration. In September 2012, we initiated efforts to develop our first mAb therapy for the treatment of acinetobacter infections. Many strains of *Acinetobacter* are multidrug-resistant and pose an increasing global threat to hospitalized patients, wounded military personnel and those affected by natural disasters. A treatment for acinetobacter infections represents a multi-billion dollar market opportunity.

(mAbLogix™ and LEAP™ are registered trademarks of Intrexon Corporation)

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Synthetic Biologic Program:

- Our synthetic DNA-based product candidate is intended to treat PAH, a serious life-threatening lung disease. This product is designed to deliver DNA that encodes a therapeutic protein called prostacyclin synthase (PGIS) locally to the pulmonary arteries of PAH patients via a single procedure, and, via an oral daily pill, control the long-term local expression of such therapeutic protein. We are developing this initial product candidate pursuant a global exclusive channel collaboration that we entered into with Intrexon in November 2011. As part of this collaboration, we have access to Intrexon's UltraVector® platform and RheoSwitch Therapeutic System® for this product application. We anticipate that by continuously producing and delivering prostacyclin directly where it is needed, in the pulmonary arteries of PAH patients, this product candidate may overcome the dose limiting side effects of systemic prostacyclin treatments for PAH, a mainstay of PAH treatment. According to GlobalData, the global market for PAH treatments is estimated to exceed $3.6 billion by 2015.

(UltraVector® and RheoSwitch Therapeutic System® are registered trademarks of Intrexon Corporation)

Multiple Sclerosis Programs:

- Trimesta™ (oral estriol) is being developed as an oral once-daily treatment for relapsing-remitting MS in women. Patient enrollment of 164 patients is complete in this randomized, double-blind, placebo-controlled Phase II clinical trial being conducted at 15 centers in the U.S. Patients are being dosed and monitored for two years. This clinical trial is supported by grants exceeding $8 million, which should be sufficient to fund the trial through completion. Current sales of injectable disease-modifying therapies for MS are estimated at $8.9 billion annually. According to various reports, sales of oral disease-modifying therapies for MS, of which Trimesta™, if and when approved, would be in such class, are anticipated to grow from $500 million in 2010 to $5 billion annually by 2017.

- Trimesta™ is also being developed for the treatment of cognitive dysfunction in female MS patients. In January 2012, patient enrollment began in a randomized, double-blind, placebo-controlled Phase II clinical trial being conducted at University of California, Los Angeles (UCLA). Patient recruitment and enrollment into this trial is ongoing. The majority of the costs of this trial are being funded by grants from foundations and charitable organizations and we have pledged approximately $500,000 to UCLA to partially fund this trial payable over three years. An estimated 50-65% of MS patients are expected to develop disabilities due to cognitive dysfunction and there is currently no approved treatment.

Other Programs:

- AEN-100 (gastroretentive zinc acetate) is a novel formulation of zinc acetate that may be used for the treatment of ALS, also known as Lou Gehrig’s disease. Previous investigator studies have suggested that alterations in the

handling and disposition of zinc ions in the brain may be important in the initiation and development of ALS. We are currently collaborating with the investigator and, based on feedback from the United States Food & Drug Administration (FDA), intend to design a clinical development pathway for AEN-100 in the treatment of ALS. There is only one approved therapy for ALS, the efficacy of which is considered to be marginal. Based on an estimated annual price of $10,000 per ALS patient, we estimate that the total market potential in the U.S. is $300 million.

- Effirma™ (flupirtine) is being developed for the treatment of fibromyalgia by Meda AB (Meda), a multi-billion dollar international pharmaceutical company. On May 6, 2010, we entered into a sublicense agreement with Meda covering all of our patents' rights on the use of flupirtine for fibromyalgia in the U.S., Canada and Japan. According to Meda's 2011 Annual Report filed in May 2012, flupirtine for fibromyalgia is currently in Phase II development. The sublicense agreement provides that all ongoing and future development costs are to borne by Meda and we are entitled to receive certain payments if milestones are achieved and royalties on sales. Based on an estimated annual price of $1,200 per fibromyalgia patient, we estimate that the total market potential in the U.S. is $6 billion.

Recent Developments

On November 18, 2011, we entered into a Channel Agreement with Intrexon that governs an "exclusive channel collaboration" arrangement in which we intend to use Intrexon's technology directed towards the production of PGIS, through the use of *in vivo* conditionally regulated embedded controllable bioreactors for the treatment of PAH. The Channel Agreement establishes committees comprised of our and Intrexon representatives that will govern activities related to the PAH program in the areas of project establishment, chemistry, manufacturing and controls, clinical and regulatory matters, commercialization efforts and intellectual property.

As partial consideration for execution of the Channel Agreement, we entered into a Stock Purchase Agreement with Intrexon pursuant to which we issued to Intrexon a number of shares of our common stock equal to 9.995% of the number of shares of our common stock issued and outstanding following and giving effect to such issuance (the "First Tranche") at a purchase price equal to the $0.001 par value of such shares, which issuance was deemed paid in partial consideration for the execution and delivery of the Channel Agreement. We also agreed to issue additional shares of our common stock to Intrexon upon dosing of the first patient in a Phase II clinical trial sponsored by us in the U.S., or similar study as the parties may agree in a country other than the U.S.

On December 21, 2011, we announced that the Board of Directors had taken several actions to prioritize our focus on our entry into the emerging field of synthetic biology. In connection with the change in business focus on March 8, 2012, we entered into a Membership Interest Purchase Agreement, and certain related agreements, pursuant to which we sold all of our interest in the Adeona Clinical Laboratory (the "Lab") to Hartlab, LLC, an entity controlled by the Lab's former owner, in consideration for (i) the immediate assignment of the Lab's outstanding accounts receivable up through the date of closing, plus (ii) Seven Hundred Thousand Dollars ($700,000) payable pursuant to the terms of a two-year non-recourse promissory note secured by all of the assets of the Lab. *See Note 3 to the Notes to the Consolidated Financial Statements – Discontinued Operations of Adeona Clinical Laboratory and Note Receivable.*

On February 15, 2012, upon stockholder approval, we amended our Articles of Incorporation to change our name to Synthetic Biologics, Inc. Our common stock continues trade on the NYSE MKT (formerly the NYSE Amex and American Stock Exchange), under the symbol "SYN". Prior to this time and since October 16, 2008, our name was Adeona Pharmaceuticals, Inc. and we traded on the NYSE MKT stock exchange under the symbol "AEN". We are incorporated in the State of Nevada. We continue to maintain our principal executive offices in Ann Arbor, MI, and are currently located at 617 Detroit Street, Suite 100**,** Ann Arbor, MI 48104.

On August 6, 2012, we expanded our relationship with Intrexon and entered into the Channel Agreement with Intrexon that governs an "exclusive channel collaboration" arrangement in which we will use Intrexon's technology relating to the identification, design and production of human antibodies and DNA vectors for the development and commercialization of a series of monoclonal antibody therapies for the treatment of certain serious infectious diseases (the "Program"). The Channel Agreement establishes committees comprised of our and Intrexon representatives that will govern activities related to the Program in the areas of project establishment, chemistry, manufacturing and controls, clinical and regulatory matters, commercialization efforts and intellectual property.

On October 16, 2012, a closing was held for the transaction previously announced in August 2012 between ourselves and Intrexon. Pursuant to the terms of a Stock Issuance Agreement with Intreson, we issued 3,552,210 shares of our common stock, $0.001 par value, which issuance is also deemed paid in partial consideration for the execution and delivery of the Exclusive Channel Collaboration Agreement, dated August 6, 2012, between ourselves and Intrexon. We also agreed to register the shares issued to Intrexon in accordance with the First Amendment to Registration Rights Agreement.

On October 25, 2012, we entered into a Stock Purchase Agreement (the "Purchase Agreement") with certain accredited investors (the "Purchasers"), pursuant to which we agreed to sell to the Purchasers in a private placement an aggregate of 6,750,000 shares of our common stock at a price per share of $1.60 (the "Common Shares") for aggregate gross proceeds of $10.8 million and net proceeds of $10.1 million (the "Offering"). On October 30, 2012, we completed the Offering. We intend to use the net proceeds from the Offering to develop our monoclonal antibody and synthetic DNA programs through our Exclusive Channel Collaborations with Intrexon Corporation, and for general corporate purposes, including the execution of our business plan and expansion of our pipeline.

In connection with the Offering, we also entered into a registration rights agreement with certain of the Purchasers (the "Registration Rights Agreement"). The Registration Rights Agreement requires that we file a registration statement (the "Initial Registration Statement") with the Securities and Exchange Commission (the "SEC") within forty-five (45) days of the closing date of the Offering (the "Filing Date") for the resale by the Purchasers of all of the Common Shares owned by such Purchasers and all shares of Common Stock issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect thereto (the "Registrable Securities"). The Initial Registration Statement must be declared effective by the SEC within ninety (90) days of the closing date of the Offering (the "Effectiveness Date") subject to certain adjustments. Upon the occurrence of certain events (each an "Event"), including, but not limited to, that the Initial Registration Statement is not filed prior to the Filing Date, we will be required to pay to each of the Purchasers liquidated damages of 1.5% of their aggregate purchase price upon the date of the Event and then monthly thereafter until the Event is cured. In no event will the aggregate amount of liquidated damages payable to each of the Purchasers exceed in the aggregate 10% of the aggregate purchase price paid by such Purchaser for the Registrable Securities.

In connection with the Offering, we also entered into an agreement with a certain Purchaser that is an affiliate of Intrexon Corporation (the "Joinder Agreement") pursuant to which such Purchaser agreed to be bound by the terms of and join Intrexon Corporation as a party to its registration rights agreement with us entered into in connection with the Exclusive Channel Collaboration Agreement between ourselves and Intrexon Corporation dated August 6, 2012.

Griffin Securities, Inc. (the "Placement Agent") served as the placement agent for the Offering. In consideration for services rendered as the Placement Agent in the Offering, we agreed to (i) pay to the Placement Agent cash commissions equal to 6.0% of the gross proceeds received in the Offering, (ii) issue to the Placement Agent, or its designee, a five-year warrant to purchase up to 635,855 shares of our common stock with an exercise price of $1.60 per share (the "Placement Agent Warrant") and (iii) reimburse the Placement Agent for its reasonable actual out-of-pocket expenses incurred in connection with the Offering, including reasonable legal fees and disbursements. The Placement Agent Warrant also provides for the same registration rights and obligations, and is subject to certain limitations, as set forth in the Registration Rights Agreement with respect to the Common Shares underlying such warrant.

On November 8, 2012, we entered into an Asset Purchase Agreement (the "Agreement") with Prev ABR LLC ("Prev"), pursuant to which we have the right to acquire the *C. diff* program assets of Prev, including pre-Investigational New Drug (IND) package, Phase I and Phase II clinical data, manufacturing process data and all issued and pending U.S. and international patents. Pursuant to the Agreement, we paid Prev an initial cash payment of $100,000 upon execution of the Agreement and subject to closing conditions anticipated to occur within 30 days, we will pay an additional payment $135,000 in cash and 625,000 unregistered shares of our common stock to Prev. In addition, upon the achievement of the milestones set forth below, Prev may be entitled to receive additional consideration payable 50% in cash and 50% in our stock, subject to Prev's option to receive the entire payment in shares of our stock, with the exception of the first milestone payments to be paid in cash: (i) upon commencement of an IND; (ii) upon commencement of a Phase I clinical trial; (iii) upon commencement of a Phase II clinical trial; (iv) upon commencement of a Phase III clinical trial; (v) upon Biologic License Application (BLA) filing in the U.S. and for territories outside of the U.S. (as defined in the Agreement); and, (vi) upon BLA approval in the U.S. and upon approval in territories outside the-U.S. The Agreement and stock issuances are subject to prior approval of the NYSE MKT, LLC. The Agreement is subject to certain due diligence obligations and no royalties are payable to Prev under the Agreement.

The Agreement provides for termination prior to closing: (i) upon the mutual agreement of the parties; (ii) by Prev if the closing has not occurred within thirty (30) days of the execution of the Agreement; provided that such failure to close is not due to the failure of Prev to fulfill its obligations under the Agreement or Prev has not been the cause of such failure, or (iii) by us at any time. If the Agreement is terminated by us then we shall be entitled to receive a refund of half of its initial cash payment, in addition to any fees paid by us on behalf of Prev and if such termination is due to the failure of Prev to fulfill its obligations under the Agreement or a breach of a representation or warranty of Prev then we shall be entitled to a refund of the entire cash payment in addition to any fees paid by us on behalf of Prev.

The Agreement also provides that Prev has a right to the return to it of all assets acquired by us under the Agreement if on or prior to the date that is (i) thirty (30) months after the execution of the Agreement, we have not initiated toxicology studies in non-rodent models or (ii) thirty six (36) months have not filed an IND under the program related to the assets and such failure is not due to action or inaction of Prev or breach of its representations or warranties or covenants or if there is a change of control as defined in the Agreement and after such change of control the assets are not further developed; provided however that such thirty (30) and thirty six (36) month periods can be extended by us for an additional twelve (12) months upon payment of a cash milestone payment.

To date, we have financed our operations primarily through public and private sales of our common stock, and we expect to continue to seek to obtain the required capital in a similar manner. We have incurred an accumulated deficit of $56.9 million through September 30, 2012. We cannot provide any assurance that we will be able to achieve profitability on a sustained basis, if at all, obtain the required funding, obtain the required regulatory approvals, or complete additional corporate partnering or acquisition transactions.

Pipeline Programs and Therapeutic Areas

Infectious Disease Programs

We are pursuing the development of treatments for infectious diseases. Infectious disease outbreaks are increasing while intervention options declining due to widespread multidrug-resistant pathogens, increasing numbers of immuno-compromised patients and the discovery of new pathogens.

Infectious diseases are caused by organisms that are typically invisible to the naked eye, such as bacteria, viruses, toxins, parasites or fungi. Many microorganisms settle in and on our bodies; normally they are harmless or even helpful, but under certain circumstances they may cause disease. An infectious disease is termed contagious if it can easily be spread, directly or indirectly, from one person to another. Some infectious diseases, however, are transmitted via bites from insects or animals, while others are acquired by consuming contaminated food or water, along with other exposures in the environment.

Intrexon Collaboration for Infectious Diseases

In August 2012, we entered into a second worldwide exclusive channel collaboration with Intrexon through which we intend to develop a series of mAb therapies for the treatment of certain infectious diseases not adequately addressed by existing therapies. Utilizing Intrexon's comprehensive suite of proprietary technologies, including the mAbLogix™ platform for rapid discovery of fully human mAbs and the LEAP™ cell processing station, our initial efforts will target

three infectious disease indications. We also have the option to target an additional five infectious disease indications under this collaboration.

Monoclonal Antibodies for Infectious Diseases

Acting as the body's army, antibodies are proteins, generally found in the bloodstream, that provide immunity in detecting and destroying pathogens, such as viruses and bacteria and their associated toxins. MAbs can also be designed and produced as therapeutic agents, utilizing protein engineering and recombinant production technologies. The mAbs being developed under the Synthetic Biologics' collaboration with Intrexon are intended to supplement a patient's own immune system by providing the means to specifically and rapidly neutralize and/or clear specific pathogens and toxins of interest in a process known as "passive immunity". Many pathogens that cause infectious diseases are innately resistant to, or over time have developed increased resistance to, antibiotics and other drugs. We intend to utilize Intrexon's comprehensive suite of proprietary mAb design and recombinant protein production technologies to efficiently create potent candidate mAbs for human testing and use to specifically treat certain infectious diseases for which current therapies are unavailable or inadequate.

First Infectious Disease Target: Acinetobacter

In September 2012, we initiated efforts to develop our first mAb therapy for the treatment of acinetobacter infections under our collaboration with Intrexon. *Acinetobacter* is a difficult to treat pathogen due to its rapid and well-established resistance to most antibiotics, making it a multidrug-resistant pathogen. In addition, as a biofilm-forming pathogen, *Acinetobacter* has the ability to survive up to twice as long as non-biofilm-forming pathogens. In the U.S., *Acinetobacter* has been reported to be the cause of up to 2.6% of hospital acquired infections, 1.3% of bloodstream infections and 7% of ICU respiratory tract infections, and more than half of the *Acinetobacter* isolates are multidrug-resistant. Patients with infections caused by *Acinetobacter* have been reported having mortality rates as high as 43% in the hospital and in the ICU. While *Acinetobacter* is a well-documented pathogen in the hospital setting, this pathogen also poses an increasing danger to wounded servicemen and women in military treatment centers and to those treated in trauma centers following natural disasters.

A treatment for acinetobacter infections represents a multi-billion dollar market opportunity.

Synthetic Biologic Program

We are engaged in the emerging field of synthetic biology directed for the purpose of developing new human therapeutic products. Synthetic biology is an emerging field that combines molecular biology and automation to design, optimize and construct new biological systems and functions. These technologies utilize a combination of automated processes including, DNA sequencing, computer-aided design, DNA synthesis, fabrication of modular transgenes and high throu