AmpliPhi Biosciences Corp
Form 424B4
November 17, 2016

Filed Pursuant to Rule 424(b)(4)
Registration No. 333-213421

PROSPECTUS

5,335,000 Shares of Common Stock

Warrants to Purchase 5,335,000 Shares of Common Stock

We are offering 5,335,000 shares of our common stock and warrants to purchase an aggregate of 5,335,000 shares of our common stock (and the shares of common stock that are issuable from time to time upon exercise of the warrants). Each share of common stock is being sold together with a warrant to purchase one share of our common stock, at an exercise price of $0.75 per share. The warrants will be exercisable immediately and will expire five years from the date of issuance. The shares of common stock and warrants can only be purchased together in this offering but will be issued separately and will be immediately separable upon issuance. Our common stock is listed on the NYSE MKT under the symbol APHB. On November 16, 2016, the last reported sale price of our common stock on the NYSE MKT was $0.97 per share. There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply for a listing of the warrants on any national securities exchange.

We are an emerging growth company as that term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

	Per Share and Accompanying Warrant	Total
Public offering price[1]	$ 0.75	$ 4,001,250
Underwriting discounts and commissions[2]	$ 0.045	$ 240,075
Proceeds, before expenses, to us	$ 0.705	$ 3,761,175

(1) The public offering price is $0.74 per share of common stock and $0.01 per accompanying warrant.

(2) In addition, we have agreed to reimburse the underwriters for certain expenses. See Underwriting beginning on page 55 of this prospectus for additional information.

The offering is being underwritten on a firm commitment basis.

Investing in our securities involves a high degree of risk. See the section entitled Risk Factors beginning on page 8 of this prospectus and elsewhere in this prospectus for a discussion of information that should be considered in connection with an investment in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation

to the contrary is a criminal offense.

The underwriters expect to deliver the shares of common stock and warrants to purchasers on or about November 22, 2016.

Sole Book-Running Manager

Roth Capital Partners

Co-Manager

Griffin Securities, Inc.

The date of this prospectus is November 17, 2016

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We have not, and the underwriters have not, authorized anyone to provide any information or to make any representations other than those contained in this prospectus or in any free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the securities offered hereby, and only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus or in any applicable free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside the United States: We have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States.

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PROSPECTUS SUMMARY

This summary highlights information contained in other parts of this prospectus or incorporated by reference into this prospectus from our filings with the Securities and Exchange Commission, or SEC, listed in the section of the prospectus entitled Incorporation of Certain Information by Reference. Because it is only a summary, it does not contain all of the information that you should consider before purchasing our securities in this offering and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere or incorporated by reference into this prospectus. You should read the entire prospectus, the registration statement of which this prospectus is a part, and the information incorporated by reference herein in their entirety, including the Risk Factors and our financial statements and the related notes incorporated by reference into this prospectus, before purchasing our securities in this offering. Unless the context requires otherwise, references in this prospectus to AmpliPhi, we, us and our refer to AmpliPhi Biosciences Corporation together with its wholly owned subsidiaries.

Overview

Our Company

We are a biotechnology company focused on the discovery, development and commercialization of novel phage therapeutics. Phage therapeutics use bacteriophages, a family of viruses, to kill pathogenic bacteria. Phages have powerful and highly selective mechanisms of action that permit them to target and kill specific bacteria. We believe that phages represent a promising means to treat bacterial infections, especially those that have developed resistance to current therapies, including the so-called multi-drug-resistant or superbug strains of bacteria.

Our goal is to be the leading developer of phage therapeutics. We are combining our expertise in the manufacture of drug-quality bacteriophages and our proprietary approach and expertise in identifying, characterizing and developing naturally occurring bacteriophages with that of our collaboration partners in bacteriophage biology, synthetic biology and manufacturing, to develop second-generation bacteriophage products.

The extensive use of antibiotics since their discovery in the 1940s has resulted in drug resistance among many disease-causing bacteria. According to the U.S. Centers for Disease Control and Prevention, resistance to antibiotics threatens to reverse many of the key medical advances of the last half-century. Examples of clinically important microbes that are rapidly developing resistance to available antimicrobials include bacteria that cause skin, bone, lung and bloodstream infections (e.g., *S. aureus* and methicillin-resistant *S. aureus*, or MRSA), pneumonia and lung infections in both community and hospital settings and cystic fibrosis patients (e.g., *A. baumanii, P. aeruginosa,* and *K. pneumoniae*), meningitis (e.g., *S. pneumonia*), urinary tract and gastrointestinal infections (e.g., *E. coli* and *C. difficile*). As phages kill bacteria in ways entirely unlike the mechanisms used by traditional antibiotics, we believe that multi-drug resistant bacteria will be susceptible to phage therapy. Should resistant bacteria emerge or evolve, we believe it will remain possible to identify phages that can effectively kill these resistant bacteria. Furthermore, we have found that in some circumstances the selective pressure applied by phage use on antibiotic-resistant bacteria can result in those bacteria reverting back to being antibiotic sensitive.

Our lead product candidate is AB-SA01, for the treatment of *S. aureus* infections, including MRSA. We are currently conducting a Phase 1 clinical trial of AB-SA01 for the treatment of *S. aureus* in chronic rhinosinusitis patients and a second Phase 1 clinical trial to evaluate the safety of AB-SA01 when administered topically to the intact skin of healthy adults. We expect to report final data for both trials by the end of 2016. We also have another product

candidate in earlier stage development, AB-PA01 for the treatment of *P. aeruginosa* infections, and an additional discovery program, AB-CD01 for the treatment of *C. difficile* infections.

We are developing our phage product candidates using a proprietary discovery and development platform, which is designed for rapid identification, characterization and manufacturing of multiple phage therapeutics. Each product candidate combines several carefully chosen phages, which target a specific disease-causing bacteria such as *S. aureus, P. aeruginosa*, and *C. difficile*. We believe that the combination of our platform, our manufacturing capability, our understanding of the regulatory and development requirements of

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bacteriophage therapeutics, and the clinical and scientific expertise of our collaboration partners may enable the rapid advancement of phage therapeutics through the clinic and the regulatory approval process.

We have a collaboration agreement and a license agreement with the University of Leicester to develop a phage therapeutic that targets and kills certain types of *C. difficile*. Pursuant to the license agreement, we may be obligated to pay the University of Leicester a percentage royalty in the single digits and an aggregate of up to £575,000 in milestone payments.

In November 2015, our Australian subsidiary, AmpliPhi Australia Pty Ltd, entered into a clinical trial agreement with the University of Adelaide and the Queen Elizabeth Hospital, both of Adelaide, SA, Australia, for the conduct of a clinical trial of AB-SA01 in patients with chronic rhinosinusitis complicated by a *S. aureus* infection. Dosing of all three patient cohorts in this trial has been completed. In October 2016, we reported topline safety and tolerability results which demonstrated that AB-SA01 was well-tolerated with no drug-related serious adverse events. We expect to have the complete study report before the end of 2016.

In June 2013, we entered into a cooperative research and development agreement, or Research and Development Agreement, with the United States Army Medical Research and Materiel Command focusing on developing bacteriophage therapeutics to treat *S. aureus*, *E. coli* and *P. aeruginosa* infections. In May 2016, we initiated a Phase 1 clinical trial under a U.S. investigational new drug application, or IND, to evaluate the safety of AB-SA01 administered topically to the intact skin of 12 healthy adult volunteers. The trial is now fully enrolled. In September 2016, we reported topline safety and tolerability results which demonstrated that AB-SA01 was well-tolerated with no drug-related serious adverse events. The complete study report is expected by the end of 2016.

Risks Associated with Our Business and this Offering

Our business and our ability to implement our business strategy are subject to numerous risks, as more fully described in the section entitled Risk Factors in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, incorporated herein by reference. You should read these risks before you invest in our securities. We may be unable, for many reasons, including those that are beyond our control, to implement our business strategy. In particular, risks associated with our business include:

We have incurred losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future, and our future profitability is uncertain. Even if this offering is successful, will need to raise additional capital in the future to continue operations, which may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate our product development efforts or other operations, and there will be substantial doubt about our ability to continue as a going concern.

We are seeking to develop antibacterial agents using bacteriophage technology, a novel approach, which makes it difficult to predict the time and cost of development. No bacteriophage products are currently approved for human therapeutics commercial use in the United States.

Our product candidates must undergo rigorous clinical testing, such clinical testing may fail to demonstrate safety and efficacy and any of our product candidates could cause undesirable side effects, which would substantially delay or prevent regulatory approval or commercialization.

We determined that we had a material weakness as of December 31, 2014 and December 31, 2015. If we fail to maintain proper and effective internal control over financial reporting, our ability to produce accurate financial statements on a timely basis could be impaired and our public reporting may be unreliable.

We may be required to issue a significant number of additional shares of common stock for no additional consideration to certain of our stockholders in connection with the closing of this offering; we may not be able to satisfy our potential contractual obligation to issue these shares.

We are dependent on patents and proprietary technology. If we fail to adequately protect this intellectual property or if we otherwise do not have exclusivity for the marketing of our products, our ability to commercialize products could suffer.

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If our competitors are able to develop and market products that are more effective, safer or more affordable than ours, or obtain marketing approval before we do, our commercial opportunities may be limited.

If you purchase our securities in this offering, you will incur immediate and substantial dilution.

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

Corporate and Other Information

We were incorporated under the laws of the State of Washington in March 1989 as a wholly owned subsidiary of Immunex Corporation and began operations as an independent company in 1992 as Targeted Genetics Corporation.

In January 2011, we completed the acquisition of Biocontrol Ltd, an antimicrobial biotechnology company based in the United Kingdom, with the goal of developing their phage therapy programs using funding from the sale of our legacy gene therapy assets.

In February 2011, we changed our name to AmpliPhi Biosciences Corporation.

In November 2012, we completed the acquisition of Special Phage Holdings Pty Ltd, a company based in Australia, which we refer to as SPH, with the goal of combining SPH s research on addressing the rapidly escalating problem of antibiotic resistance through the development of a series of bacteriophage-based treatments into our own development programs.

In August 2015, we effected a 1-for-50 reverse split of our common stock. The share and per share information for transactions described in this prospectus that occurred prior to the reverse split have been adjusted to give retroactive effect to the reverse split.

Our principal executive offices are located at 3579 Valley Centre Drive, Suite 100, San Diego, California 92130. The telephone number at our principal executive office is (858) 829-0829. Our website address is *http://www.ampliphibio.com*. Our website and the information contained on, or that can be accessed through, our website will not be deemed to be incorporated by reference in, and are not considered part of, this prospectus. You should not rely on our website or any such information in making your decision whether to purchase our securities in this offering.

This prospectus contains references to our trademarks and to trademarks and trade names belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the® or ™ symbols, but such references are not intended to indicate, in any way, that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

Implications of Being an Emerging Growth Company and a Smaller Reporting Company

We qualify as an emerging growth company as defined in the Jumpstart Our Business Startups Act, or JOBS Act, enacted in April 2012. An emerging growth company may take advantage of reduced reporting requirements that are otherwise applicable to public companies. These provisions include, but are not limited to:

being permitted to present only two years of audited financial statements and only two years of related Management s Discussion and Analysis of Financial Condition and Results of Operations in the documents incorporated by reference into this prospectus;

not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act;

reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements; and

exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

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We may use these provisions until the last day of our fiscal year following the fifth anniversary of the first sale of our equity securities pursuant to an effective registration statement under the Securities Act of 1933, as amended, or the Securities Act, after we became a reporting company under the Securities Exchange Act of 1934, as amended, or the Exchange Act, pursuant to our registration statement on Form 10 (File No. 000-23930). However, if certain events occur prior to the end of such five-year period, including if we become a large accelerated filer, our annual gross revenues exceed $1.0 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

We are also a smaller reporting company as defined in Exchange Act and have elected to take advantage of certain of the scaled disclosures available to smaller reporting companies.

We have elected to take advantage of certain of the reduced disclosure obligations in the registration statement of which this prospectus is a part and may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

The JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. We have irrevocably elected not to avail ourselves of this exemption and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

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The Offering

Common stock offered by us in this offering

5,335,000 shares

Warrants offered by us in this offering

Warrants to purchase up to 5,335,000 shares of common stock. Each share of our common stock is being sold together with a warrant to purchase one share of our common stock. Each warrant will have an exercise price of $0.75 per share, will be immediately exercisable and will expire on the fifth anniversary of the original issuance date. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants. The warrants have an exercise price protection feature as described in the form of warrant attached as an exhibit to the registration statement of which this prospectus forms a part.

Common stock to be outstanding after this offering

16,742,240 shares (assuming none of the warrants issued in this offering are exercised).

Use of proceeds

We intend to use the net proceeds from this offering for general corporate purposes, including manufacturing expenses, clinical trial expenses, research and development expenses and general and administrative expenses. See Use of Proceeds.

Risk factors

You should read the Risk Factors section of this prospectus for a discussion of certain of the factors to consider carefully before deciding to purchase any shares of our common stock and warrants in this offering.

National Securities Exchange Listing

Our common stock is listed on the NYSE MKT under the symbol APHB. We do not intend to list the warrants on any securities exchange or nationally recognized trading system.

The number of shares of our common stock to be outstanding after this offering is based on 11,120,394 shares of common stock outstanding as of September 30, 2016 and assumes:

the issuance by us of 5,335,000 shares of common stock in this offering; and

the issuance by us of 286,846 shares of common stock in connection with the closing of this offering pursuant to the Common Stock Issuance Agreement, dated April 8, 2016, or the CSIA, by and between us and certain of our stockholders;

and excludes, as of September 30, 2016:

736,938 shares of common stock issuable upon the exercise of outstanding stock options, at a weighted-average exercise price of $6.78 per share;

1,652,162 shares of common stock reserved for future issuance under our 2016 Equity Incentive Plan, or the 2016 plan;

120,000 shares of common stock reserved for future issuance under our 2016 Employee Stock Purchase Plan, or the ESPP; and

2,443,479 shares of common stock issuable upon the exercise of outstanding warrants, at a weighted-average exercise price of $5.87 per share.

The number of shares we may be required to issue pursuant to the CSIA in connection with the closing of this offering may be in excess of the 286,846 shares described above. See Risk Factors Risks Related to this Offering *We may be required to issue a significant number of additional shares of common stock for no additional consideration to certain of our stockholders in connection with the closing of this offering; we may not be able to satisfy our potential contractual obligation to issue these shares* for additional information.

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Consolidated Summary Financial Data

The following tables summarize certain of our historical financial data. We derived the consolidated summary statement of operations data for the years ended December 31, 2015 and 2014 from our audited consolidated financial statements incorporated by reference into this prospectus from our Annual Report on Form 10-K for the year ended December 31, 2015. The consolidated summary statement of operations data for the nine months ended September 30, 2016 and 2015 and the consolidated summary balance sheet data as of September 30, 2016 were derived from our unaudited consolidated financial statements incorporated by reference into this prospectus from our Quarterly Report on Form 10-Q for the quarter ended September 30, 2016. The unaudited consolidated financial statements have been prepared on a basis consistent with our audited consolidated financial statements included in this prospectus and include, in our opinion, all adjustments, consisting only of normal recurring adjustments, necessary for the fair presentation of the financial information in those statements, including giving retroactive effect to the 1-for-50 reverse split of our common stock that was effected on August 7, 2015 for the presentation of per share information. Our historical results are not necessarily indicative of the results that may be expected in the future and results of interim periods are not necessarily indicative of the results for the entire year. The consolidated summary financial data should be read together with our consolidated financial statements and related notes and Management s Discussion and Analysis of Financial Condition and Results of Operations incorporated by reference in this prospectus.

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2014	2016	2015
Consolidated Statements of Operations Data				
Revenue	$475,000	$409,000	$238,000	$347,000
Operating expenses:				
Research and development	3,992,000	5,805,000	4,876,000	2,777,000
General and administrative	6,710,000	8,714,000	6,876,000	4,857,000
Total operating expenses	10,702,000	14,519,000	11,752,000	7,634,000
Loss from operations	(10,227,000)	(14,110,000)	(11,514,000)	(7,287,000)
Other income (expense):				
Change in fair value of derivative liabilities	9,940,000	37,219,000	2,403,000	9,304,000
Other expense	(302,000)		(227,000)	(302,000)
Total other income (expense)	9,638,000	37,219,000	2,176,000	9,002,000
Net income (loss) before income taxes	(589,000)	23,109,000	(9,338,000)	1,715,000
Income tax benefit	73,000			
Net income (loss)	(516,000)	23,109,000	(9,338,000)	1,715,000
Excess of fair value of consideration transferred on conversion of Series B Preferred Stock			(3,580,000)	
Accretion of Series B redeemable convertible preferred stock	(10,278,000)	(1,285,000)	(1,858,000)	(9,329,000)
Net income (loss) attributable to common stockholders	$(10,794,000)	$21,824,000	$(14,776,000)	$(7,614,000)
Per share information:				
Net income (loss) per share of common stock basic	$(1.99)	$4.21	$(1.72)	$(1.45)
	5,411,204	3,746,639	8,590,772	5,247,508

Weighted average number of shares of common stock outstanding	basic				
Net loss per share of common stock	diluted	$(1.99)	$(2.33)	$(1.77)	$(1.45)
Weighted average number of shares of common stock outstanding	diluted	5,411,204	5,886,730	8,648,914	5,247,508

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	As of September 30, 2016
Consolidated Balance Sheet Data:	
Cash and cash equivalents	$3,967,000
Working capital	1,407,000
Total assets	26,036,000
Total liabilities	7,808,000
Accumulated deficit	(371,860,000)
Total stockholders equity	18,228,000

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RISK FACTORS

Investing in our securities involves a high degree of risk. You should consider carefully the risks described below, together with all of the other information included or incorporated by reference in this prospectus, including the risks and uncertainties discussed under Risk Factors in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, before deciding whether to purchase shares of our common stock and warrants in this offering. All of these risk factors are incorporated herein in their entirety. The risks described below and incorporated by reference are material risks currently known, expected or reasonably foreseeable by us. If any of these risks actually materialize, our business, prospects, financial condition, and results of operations could be seriously harmed. This could cause the trading price of our common stock and the value of the warrants to decline, resulting in a loss of all or part of your investment.

Risks Related to this Offering

You will experience immediate and substantial dilution if you purchase securities in this offering.

As of September 30, 2016, our net tangible book deficit was approximately $(2.1) million, or $(0.19) per share. Since the price per share of our common stock being offered in this offering is substantially higher than the net tangible book deficit per share of our common stock, you will suffer substantial dilution with respect to the net tangible book value of the common stock you purchase in this offering. Based on the combined public offering price of $0.75 per share of common stock and accompanying warrant being sold in this offering, and our net tangible book deficit per share as of September 30, 2016, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of $(0.68) per share with respect to the net tangible book value of the common stock. See the section entitled Dilution for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

We may be required to issue a significant number of additional shares of common stock for no additional consideration to certain of our stockholders in connection with the closing of this offering; we may not be able to satisfy our potential contractual obligation to issue these shares.

In April 2016, we entered into a Common Stock Issuance Agreement, or CSIA, with certain former holders, or the Holders, of our Series B Preferred Stock. The terms of the CSIA require us to issue shares of common stock for no additional consideration to the Holders in connection with the closing of this offering if the public offering price per share of common stock is less than $2.35 per share. Based on the public offering price per share of common stock in this offering of $0.74, we may be obligated under the CSIA to issue the Holders an aggregate of 2,224,078 shares of common stock within 15 business days following the closing of this offering. However, under the rules of the NYSE MKT, the maximum number of shares we can issue to the Holders as a result of this offering is 286,846 shares unless we obtain stockholder approval to issue shares in excess of this amount. Our inability to comply in full with our potential obligation under the CSIA to issue shares to the Holders in connection with the closing of this offering could have adverse consequences, including, without limitation:

the Holders may bring an action against us for breach of contract, or threaten to bring an action against us, either of which could require us to expend significant time and resources to resolve the matter, and we may not be successful;

we may need to call a special meeting of our stockholders to seek their approval of the issuance by us to the Holders of the number of shares to be issued to the Holders in connection with the closing of this offering, less the 286,846 shares we are currently permitted to issue, which would require us to expend time and resources, and our stockholders may not ultimately approve such issuance; and

we may need to provide other consideration to the Holders to settle potential claims arising from our inability to satisfy our potential contractual obligations under the CSIA, which could involve:

cash make-whole payments, which in turn would impact our expected use of the net proceeds from this offering and deplete our cash resources faster than we would otherwise anticipate; and

other unfavorable terms that could make it difficult for us to raise financing in the future, which would raise further doubts about our ability to continue as a going concern.

We may be required to issue a significant number of additional shares ofcommon stock for no additional consideration

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The occurrence of any of the foregoing, or even the potential for them to occur, could result in a material decline in our stock price.

There is no public market for the warrants being offered in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the warrants on any securities exchange or nationally recognized trading system, including the NYSE MKT. Without an active market, the liquidity of the warrants will be limited.

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

Our management will have broad discretion in the application of the net proceeds from this offering, including for any of the purposes described in the section entitled Use of Proceeds, and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management may not apply the net proceeds from this offering in ways that ultimately increase the value of your investment. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

There may be future sales of our securities or other dilution of our equity, which may adversely affect the market price of our common stock.

We are generally not restricted from issuing additional common stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, common stock. The market price of our common stock could decline as a result of sales of common stock or securities that are convertible into or exchangeable for, or that represent the right to receive, common stock after this offering or the perception that such sales could occur.

Holders of warrants purchased in this offering will have no rights as common stockholders until such holders exercise their warrants and acquire our common stock.

Until holders of warrants acquire shares of our common stock upon exercise of the warrants, holders of warrants will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of the warrants, the holders will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

Even if this offering is successful, we will need to raise additional capital in the future to continue operations, which may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may

force us to delay, limit or terminate our product development efforts or other operations.

We have had recurring losses from operations, negative operating cash flow and an accumulated deficit. We do not generate any cash from operations and must raise additional funds in order to continue operating our business. We expect to continue to fund our operations primarily through equity and debt financings in the future. If additional capital is not available to us when needed or on acceptable terms, we may not be able to continue to operate our business pursuant to our business plan or we may have to discontinue our operations entirely. As of September 30, 2016, we had cash and cash equivalents of $4.0 million. We estimate that we will receive net proceeds of approximately $3.4 million from the sale of the securities offered by us in this offering, based on the combined public offering price of $0.75 per share and accompanying warrant, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the warrants issued in this offering. We currently anticipate that our existing resources, together with the expected net proceeds from this offering, will be sufficient to fund our planned operations until the end of the first quarter of 2017.

Even if this offering is successful, we will need to raise additional capital inthe future to continue operations, which r

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Developing drugs and conducting clinical trials is expensive. Our future funding requirements will depend on many factors, including:

the costs and timing of our research and development activities;
the progress and cost of our clinical trials and other research and development activities;
the cost and timing of securing manufacturing capabilities for our clinical product candidates and commercial products, if any;
the terms and timing of any collaborative, licensing, acquisition or other arrangements that we may establish;
the costs and timing of seeking regulatory approvals;
the costs of filing, prosecuting, defending and enforcing any patent applications, claims, patents and other intellectual property rights; and
the costs of lawsuits involving us or our product candidates.

We may seek funds through arrangements with collaborators or others that may require us to relinquish rights to the products candidates that we might otherwise seek to develop or commercialize independently. We cannot be certain that we will be able to enter into any such arrangements on reasonable terms, if at all.

We may seek to raise capital through a variety of sources, including:

the public equity market;
private equity financings;
collaborative arrangements;
licensing arrangements; and/or
public or private debt.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. Our ability to raise additional funds will depend, in part, the success of our preclinical studies and clinical trials and other product development activities, regulatory events, our ability to identify and enter into in-licensing or other strategic arrangements, and other events or conditions that may affect our value or prospects, as well as factors related to financial, economic and market conditions, many of which are beyond our control. We cannot be certain that sufficient funds will be available to us when required or on acceptable terms, if at all. Raising additional capital through the sale of securities could cause significant dilution to our stockholders. If we are unable to secure additional funds on a timely basis or on acceptable terms, we may be required to defer, reduce or eliminate significant planned expenditures, restructure, curtail or eliminate some or all of our development programs or other operations, dispose of technology or assets, pursue an acquisition of our company by a third party at a price that may result in a loss on investment for our stockholders, enter into arrangements that may require us to relinquish rights to certain of our product candidates, technologies or potential markets, file for bankruptcy or cease operations altogether. Any of these events could have a material adverse effect on our business, financial condition and results of operations. Moreover, if we are unable to obtain additional funds on a timely basis, there will be substantial doubt about our ability to continue as a going concern and increased risk of insolvency and loss of investment by our stockholders.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. Our ability to raise additional funds will depend, in part, the success of our preclinical studies and clinical trials and other product development activities, regulatory events, our ability to identify and enter into in-licensing or other strategic arrangements, and other events or conditions that may affect our value or prospects, as well as factors related to financial, economic and market conditions, many of which are beyond our control. We cannot be certain that sufficient funds will be available to us when required or on acceptable terms, if at all. Raising additional capital through the sale of securities could cause significant dilution to our stockholders. If we are unable to

Even if this offering is successful, we will need to raise additional capital inthe future to continue operations, which r

Even if this offering is successful, we will need to raise additional capital inthe future to continue operations, which r

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secure additional funds on a timely basis or on acceptable terms, we may be required to defer, reduce or eliminate significant planned expenditures, restructure, curtail or eliminate some or all of our development programs or other operations, dispose of technology or assets, pursue an acquisition of our company by a third party at a price that may result in a loss on investment for our stockholders, enter into arrangements that may require us to relinquish rights to certain of our product candidates, technologies or potential markets, file for bankruptcy or cease operations altogether. Any of these events could have a material adverse effect on our business, financial condition and results of operations. Moreover, if we are unable to obtain additional funds on a timely basis, there will be substantial doubt about our ability to continue as a going concern and increased risk of insolvency and loss of investment by our stockholders.

Even if this offering is successful, we will need to raise additional capital inthe future to continue operations, which r

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements. 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 in this prospectus or the documents incorporated herein by reference. These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

our estimates regarding anticipated operating losses, capital requirements and needs for additional funds;

our ability to raise additional capital when needed and to continue as a going concern;

our ability to manufacture, or otherwise secure the manufacture of, sufficient amounts of our product candidates for our preclinical studies and clinical trials;

our clinical development and other research and development plans and expectations, including our expectation to report final data for two Phase 1 clinical trials by the end of 2016 and our plans to initiate additional clinical trials;

our ability to select combinations of phages to formulate our product candidates;

the safety and efficacy of our product candidates;

the anticipated regulatory pathways for our product candidates;

our ability to successfully complete preclinical and clinical development of, and obtain regulatory approval of our product candidates and commercialize any approved products on our expected timeframes or at all;

the content and timing of submissions to and decisions made by the U.S. Food and Drug Administration, or FDA, and other regulatory agencies;

our ability to leverage the experience of our management team;

our ability to attract and keep management and other key personnel;

the capacities and performance of our suppliers, manufacturers, contract research organizations and other third parties over whom we have limited control;

the actions of our competitors and success of competing drugs that are or may become available;

our expectations with respect to future growth and investments in our infrastructure, and our ability to effectively manage any such growth;

the size and potential growth of the markets for any of our product candidates, and our ability to capture share in or impact the size of those markets;

the benefits of our product candidates;

market and industry trends;

the number of shares we may ultimately issue to the Holders pursuant to the CSIA in connection with the closing of this offering, and the consequences of our potential inability to comply with our potential contractual obligations under the CSIA;

the outcome of any litigation in which we or any of our officers or directors are involved;

the effects of government regulation and regulatory developments, and our ability and the ability of the third parties with whom we engage to comply with applicable regulatory requirements;

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the accuracy of our estimates regarding future expenses, revenues, capital requirements and need for additional financing;

our expectations regarding future planned expenditures;

our ability to achieve and maintain effective internal control over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act;

our expectations regarding the period during which we qualify as an emerging growth company under the JOBS Act;

our ability to obtain, maintain and successfully enforce adequate patent and other intellectual property protection of any of our products and product candidates;

our expected use of the net proceeds from this offering; and

our ability to operate our business without infringing the intellectual property rights of others.

In some cases, you can identify these statements by terms such as anticipate, believe, could, estimate, expect, may, plan, potential, predict, project, should, will, would or the negative of those terms, and similar ex convey uncertainty of future events or outcomes. These forward-looking statements reflect our management s beliefs and views with respect to future events and are based on estimates and assumptions as of the date of this prospectus and are subject to risks and uncertainties. We discuss many of these risks in greater detail in the documents incorporated by reference herein, usually under the heading Risk Factors. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Given these uncertainties, you should not place undue reliance on these forward-looking statements.

You should carefully read this prospectus, the documents that we incorporate by reference into this prospectus and the documents we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in this prospectus by these cautionary statements.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in any forward-looking statements, whether as a result of new information, future events or otherwise.

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USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately $3.4 million from the sale of the securities offered by us in this offering, based on the combined public offering price of $0.75 per share and accompanying warrant, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the warrants issued in this offering.

We currently intend to use the net proceeds from this offering for general corporate purposes, including manufacturing expenses, clinical trial expenses, research and development expenses and general and administrative expense. See Risk Factors for a discussion of certain risks that may affect our intended use of the net proceeds from this offering.

We may also use a portion of the net proceeds from this offering to in-license, acquire, or invest in complementary businesses, technologies, products or assets. However, we have no current plans, commitments or obligations to do so.

Our expected use of net proceeds from this offering represents our current intentions based upon our present plans and business condition. As of the date of this prospectus, we cannot currently allocate specific percentages of the net proceeds that we may use for the purposes specified above, and we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering, or the amounts that we will actually spend on the uses set forth above. The amounts and timing of our actual use of the net proceeds will vary depending on numerous factors, including our ability to obtain additional financing, the progress, cost and results of our preclinical and clinical development programs, and whether we are able to enter into future licensing or collaboration arrangements. We may find it necessary or advisable to use the net proceeds for other purposes, and our management 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 from this offering.

Pending the use of the net proceeds from this offering, we intend to invest the net proceeds in investment-grade, interest-bearing instruments.

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PRICE RANGE OF OUR COMMON STOCK

Our common stock has been listed on the NYSE MKT since August 18, 2015 under the symbol APHB. Prior to that date, our common stock was quoted on the OTCQB market under the symbol APHB.

On November 16, 2016, the closing price for our common stock as reported on the NYSE MKT was $0.97 per share. The following table sets forth the ranges of high and low sales prices per share of our common stock as quoted on the OTCQB or, if applicable, as reported on the NYSE MKT for the periods indicated. OTCQB quotations represent inter-dealer prices without retail markup, markdown or commission and may not necessarily represent actual transactions.

	High	Low
Year Ended December 31, 2014		
First Quarter	$ 37.00	$ 22.50
Second Quarter	$ 29.50	$ 17.50
Third Quarter	$ 22.50	$ 10.00
Fourth Quarter	$ 13.50	$ 3.50

	High	Low
Year Ended December 31, 2015		
First Quarter	$ 17.00	$ 8.00
Second Quarter	$ 15.00	$ 8.00
Third Quarter	$ 11.70	$ 3.79
Fourth Quarter	$ 9.00	$ 2.75

	High	Low
Year Ending December 31, 2016		
First Quarter	$ 5.49	$ 1.92
Second Quarter	$ 4.84	$ 1.45
Third Quarter	$ 2.17	$ 1.15
Fourth Quarter (through November 16, 2016)	$ 1.69	$ 0.89

As of September 30, 2016, there were 156 holders of record of our common stock. The number of stockholders of record of our common stock excludes stockholders whose shares were held in nominee or street name by brokers. The actual number of common stockholders is greater than the number of record holders, and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

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DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock. We currently intend to retain all available funds and any future earnings to support our operations and finance the growth and development of our business. Any future determination related to our dividend policy will be made at the discretion of our board of directors and will depend upon, among other factors, our results of operations, financial condition, capital requirements, contractual restrictions, business prospects and other factors our board of directors may deem relevant.

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DILUTION

Our historical net tangible book deficit as of September 30, 2016 was approximately $(2.1) million, or $(0.19) per share of common stock. Our historical net tangible book deficit is the amount of our total tangible assets less our liabilities. Historical net tangible book deficit per common share is our historical net tangible book deficit divided by the number of shares of common stock outstanding as of September 30, 2016.

After giving effect to (1) the sale of 5,335,000 shares of our common stock and warrants to purchase up to 5,335,000 shares of our common stock in this offering at the combined public offering price of $0.75 per share of common stock and accompanying warrant, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the warrants issued in this offering, and (2) the issuance by us to the Holders under the CSIA of an aggregate of 2,224,078 shares of common stock for no additional consideration in connection with the closing of this offering (without regard to any limitations on our ability to issue such shares under the rules of the NYSE MKT), our as adjusted net tangible book value as of September 30, 2016 would have been approximately $1.3 million, or $0.07 per share of common stock. This represents an immediate increase in pro forma net tangible book value of $0.27 per share to our existing stockholders, and an immediate dilution of $(0.68) per share to new investors purchasing securities in this offering at the combined public offering price.

The following table illustrates this dilution on a per share basis:

Combined public offering price per share and accompanying warrant		$ 0.75
Historical net tangible book deficit per share as of September 30, 2016	$ (0.19)	
Pro forma increase in net tangible book value per share attributable to investors in this offering	0.27	
Pro forma decrease in net tangible book value per share attributable to issuance of common stock pursuant to the CSIA	(0.01)	
As adjusted net tangible book value per share after this offering		0.07
Dilution per share to investors participating in this offering		$ (0.68)

The foregoing discussion and table does not take into account further dilution to investors in this offering that could occur upon the exercise of outstanding options and warrants, including the warrants offered in this offering, having a per share exercise price less than the public offering price per share in this offering.

The foregoing discussion and table are based on 11,120,394 shares of common stock outstanding as of September 30, 2016, and excludes as of that date:

736,938 shares of common stock issuable upon the exercise of outstanding stock options, at a weighted-average exercise price of $6.78 per share;

1,652,162 shares of common stock reserved for future issuance under the 2016 plan;

120,000 shares of common stock reserved for future issuance under the ESPP; and

2,443,479 shares of common stock issuable upon the exercise of outstanding warrants, at a weighted-average exercise price of $5.87 per share.

To the extent that options or warrants outstanding as of September 30, 2016 have been or may be exercised or other shares issued, investors purchasing securities in this offering may experience further dilution. In addition, we may seek to raise additional capital in the future through the sale of equity or convertible debt securities. To the extent that additional capital is raised 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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BUSINESS

Company Overview

We are a biotechnology company focused on the discovery, development and commercialization of novel phage therapeutics. Phage therapeutics use bacteriophages, a family of viruses, to kill pathogenic bacteria. Phages have powerful and highly selective mechanisms of action that permit them to target and kill specific bacteria. We believe that phages represent a promising means to treat bacterial infections, especially those that have developed resistance to current therapies, including the so-called multi-drug-resistant or superbug strains of bacteria.

Our goal is to be the leading developer of phage therapeutics. We are combining our expertise in the manufacture of drug-quality bacteriophages and our proprietary approach and expertise in identifying, characterizing and developing naturally occurring bacteriophages with that of our collaboration partners in bacteriophage biology, synthetic biology and manufacturing, to develop second-generation bacteriophage products.

The extensive use of antibiotics since their discovery in the 1940s has resulted in drug resistance among many disease-causing bacteria. According to the U.S. Centers for Disease Control and Prevention, or CDC, resistance to antibiotics threatens to reverse many of the key medical advances of the last half-century. Examples of clinically important microbes that are rapidly developing resistance to available antimicrobials include bacteria that cause skin, bone, lung and bloodstream infections (e.g., *S. aureus* and methicillin-resistant *S. aureus*, or MRSA), pneumonia and lung infections in both community and hospital settings and cystic fibrosis patients (e.g., *A. baumanii, P. aeruginosa,* and *K. pneumoniae*), meningitis (e.g., *S. pneumonia*), urinary tract and gastrointestinal infections (e.g., *E. coli* and *C. difficile*). As phages kill bacteria in ways entirely unlike the mechanisms used by traditional antibiotics, we believe that multi-drug resistant bacteria will be susceptible to phage therapy. Furthermore, should resistant bacteria emerge or evolve, we believe it will remain possible to identify phages that can effectively kill these resistant bacteria.

Our lead product candidate is AB-SA01, for the treatment of *S. aureus* infections, including MRSA. We also have another product candidate in earlier stage development, AB-PA01 for the treatment of *P. aeruginosa* infections, and an additional discovery program, AB-CD01 for the treatment of *C. difficile* infections.

We are developing our phage product candidates using a proprietary discovery and development platform, which is designed for rapid identification, characterization and manufacturing of multiple phage therapeutics. Each product candidate combines several carefully chosen phages, which target a specific disease-causing bacteria such as *S. aureus, P. aeruginosa*, and *C. difficile*. We believe that the combination of our platform, our manufacturing capability, our understanding of the regulatory and development requirements of bacteriophage therapeutics, and the clinical and scientific expertise of our collaboration partners may enable the rapid advancement of phage therapeutics through the clinic and the regulatory approval process.

In June 2013, we entered into a cooperative research and development agreement, or Research and Development Agreement, with the United States Army Medical Research and Materiel Command focusing on developing bacteriophage therapeutics to treat *S. aureus*, *E. coli* and *P. aeruginosa* infections. Under this Research and Development Agreement, we completed enrollment of a Phase 1 safety study of AB-SA01 for the treatment of wounds infected with *S. aureus* in July 2016. In September 2016, we reported topline safety and tolerability results which demonstrated that AB-SA01 was well-tolerated with no drug-related serious adverse events. The complete study report is expected by the end of 2016.

In September 2013, we entered into a license agreement, or the Leicester License Agreement, with the University of Leicester to develop a phage therapy to kill certain types of *C. difficile*. Pursuant to the Leicester License Agreement, we may be obligated to pay the University of Leicester a single digit royalty and an aggregate of up to £575,000 in milestone payments.

In November 2015, our Australian subsidiary, AmpliPhi Australia Pty Ltd, entered into a clinical trial research agreement with the University of Adelaide and the Queen Elizabeth Hospital, both of Adelaide, SA, Australia, to conduct a Phase 1 clinical trial titled A Phase 1 Investigator Initiated Study to Evaluate the Safety, Tolerability and Preliminary Effectiveness of AB-SA01 in Patients with Chronic Rhinosinusitis Associated with *S. aureus* infection . The University of Adelaide is sponsoring the clinical trial while we supply

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AB-SA01 and control the trial protocol. This clinical trial will primarily measure the safety and tolerability of AB-SA01 and will secondarily examine the presence of *S. aureus* and symptoms assessed by the patient as well as by the physician using standard questionnaires used by physicians to assess treatment efficacy. We enrolled nine patients in the trial, divided into three cohorts. The first cohort received a twice daily dose of AB-SA01 for seven days. The second cohort received the same dose twice daily for 14 days. The third cohort received a higher dose of AB-SA01 twice daily for 14 days. Patients will be monitored an additional 30 days following their last day of treatment. In October 2016, we reported topline safety and tolerability results which demonstrated that AB-SA01 was well-tolerated with no drug-related serious adverse events. We are planning a Phase 2 trial in chronic rhinosinusitis patients, to commence in the second half of 2017.

In January 2016, we entered into an Asset Purchase Agreement with Novolytics Ltd., which we refer to as the Novolytics Purchase Agreement, to purchase certain tangible and intangible assets. Pursuant to the Novolytics Purchase Agreement, we acquired all rights, title and interest to two families of patents. The first patent family is titled Anti-bacterial compositions and has been granted in Australia and China with prosecution pending in the United States and other countries. The second patent family is titled Novel bacteriophages and the prosecution is pending in the United States and other countries. We also received clinical isolates for *S. aureus* which will bolster our libraries of clinically relevant strains. Additionally, we received know-how relating to certain formulation processes. We also have access to all previous dialogue between Novolytics and various regulatory organizations including the United Kingdom Medicines and Healthcare Products Regulatory Agency, or MHRA.

The Need for New Anti-Infective Therapies

The rapid and continuous emergence of antibiotic-resistant bacteria has become a global crisis. Despite this crisis, the number of novel anti-infective therapies currently in development is at historically-low levels. The CDC estimates that more than two million people in the United States acquire an antibiotic-resistant infection each year and more than 23,000 of these prove fatal. It is estimated that 50% of hospital-acquired infections are resistant to first-line anti-infective therapies. The cumulative annual cost for treating resistant bacterial infections in the United States alone is estimated to be $20 billion, while the global antibiotics market opportunity was estimated to be $40.3 billion in 2015.

The CDC s latest report on the matter, *Antibiotic Resistance Threats in the United States, 2013*, notes that there are potentially catastrophic consequences of inaction and ranks *C. difficile* as belonging to the highest tier of threat, or Urgent Threats. Despite the potential market opportunity, only two New Drug Applications, or NDAs, for antibacterial drugs were approved by the FDA between 2010 and 2012 compared to 18 in the period between 1980 and 1984. One of the primary recommendations of the CDC is the development of new antimicrobials to diversify treatment options.

Product Candidates

AB-SA01: Infections Caused by S. aureus

By screening our proprietary library of phage samples, we have selected a phage product candidate mix that has demonstrated, in *in vitro* studies, greater than 92% activity against a global diversity panel that includes some of the most virulent isolates of *S. aureus*, including MRSA isolates. The three phage constituents of AB-SA01 were subsequently tested for their ability to infect clinically relevant bacterial isolates collected from around the world and were shown to have similar activity with maximal complementation. Complementation, defined as the percentage of

S. aureus isolates susceptible to more than one phage, is emphasized in product selection to reduce risk of the emergence of bacterial resistance.

In connection with our Research and Development Agreement with the U.S. Army Medical Research and Materiel Command, we are developing AB-SA01 to treat acute and chronic infections caused by *S. aureus*, including infections caused by MRSA strains of the same bacterium. MRSA infections are one of the most common causes of hospital-acquired (nosocomial) infections. The CDC estimates that more than 850,000 patients were treated for *S. aureus* infections of the skin or soft tissue in 2013 and, due to failure of first line treatment, more than 50% of these patients required a second-line treatment and approximately 35% of them required a third-line treatment. Global Data estimates the market for MRSA infection treatments alone was more than $2.7 billion in 2007. This market is forecasted to grow to more than $3.5 billion by 2019.

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Also in connection with our Research and Development Agreement with the U.S. Army, we submitted a pre-IND briefing package to the FDA to obtain their feedback on our Chemistry, Manufacturing and Controls, or CMC, program and plans for our first human clinical trial of AB-SA01 for the treatment of *S. aureus* infections of wound and skin. The FDA concurred with our plan for progressing this bacteriophage product candidate into clinical trials, specifically agreeing with the proposed manufacturing process and product specifications and not requiring non-clinical toxicology data to initiate our first Phase 1 clinical trial. We initiated the Phase 1 clinical trial in May 2016 and completed enrollment in July 2016. In September 2016, we announced topline safety and tolerability results, and we expect the complete study report to be available by the end of 2016.

In December 2015, we opened a clinical trial at the University of Adelaide Queen Elizabeth Hospital to evaluate the safety and preliminary efficacy of AB-SA01 in chronic rhinosinusitis patients infected with *S. aureus*. In October 2016, we reported topline safety and tolerability results and we expect the complete study report to be available by the end of 2016. We expect to initiate a Phase 2 trial of AB-SA01 in the second half of 2017 and to complete that trial within approximately 12 months thereafter.

AB-PA01: Lung Infections in Cystic Fibrosis (CF) Patients Caused by P. aeruginosa

We are initially developing AB-PA01 for the treatment of *P. aeruginosa*, the most prevalent bacterial infection in cystic fibrosis, or CF, patients and the one that leads to the highest mortality and is the primary cause of lung infection in approximately 80% of CF patients ages 25 to 34, causing an estimated 450 deaths per year in the United States. To develop our product candidates, we have created a global diversity panel of relevant clinical isolates (bacteria isolated from patients) from clinics around the globe. These diversity panels have been screened against our phage libraries, which are isolated and characterized according to our set of proprietary discovery protocols. We have demonstrated, in *in vitro* and *in vivo* studies, that our proprietary phage mix is able to effectively kill targeted bacteria. Furthermore, our phage mixes are selected to exhibit a high degree of overlap, defined as the number of bacteria targeted by more than one phage in the product. We believe that high overlap is an important factor in preventing bacteria from developing resistance to our phage product candidates.

Similar to work described above for *S. aureus*, we have tested over 400 clinical *P. aeruginosa* clinical isolates. As an example, initial host range testing was performed with a reference panel of 67 CF isolates. AB-PA01 showed an activity of 95.5% (64/67) with 87.5% (56/64) of the positives isolates hit by more than one phage in the mix.

In collaboration with Institut Pasteur (Paris, France) and also with the Brompton Hospital, Imperial College (London, United Kingdom), we have demonstrated in the preclinical studies that phages can effectively treat infections in animal models of acute *P. aeruginosa* lung infections. In one such study, we inoculated eight mice and treated them with either PBS (control group), our phage mix, or with an antibiotic.

Bacterial counts and the number of bacteriophage infection units detected by assay, or phage titers, were measured in these animals after 24 hours, and the results demonstrated that our phage mix effectively lowered the bacterial counts, or CFU, in the mouse lung to levels comparable to antibiotic treatment (PBS vs. antibiotic, p=0.0003; PBS vs. bacteriophage, p=0.0003). A p-value is a statistical measure of the probability that the difference in two values could have occurred by chance. The smaller the p-value, the lower the likelihood is that the difference occurred by chance, or the greater our confidence is that the results are statistically significant. Furthermore, it was evident that phage replicated to high levels in the infected lung.

An additional preclinical study conducted at the Institut Pasteur in mice (12 mice in each of the treatment and control groups) demonstrated the ability of our phage mix to reach the lung within two hours of being delivered by oral administration. The phage levels increased between two and six hours post-treatment, and the results were statistically significant (p-value <0.001). These results demonstrate that when orally administered in mice, phages not only reached the lungs, but were also able to infect and multiply in target bacteria.

In a separate *in vivo* study of acute *P. aeruginosa* infection of the mouse lung conducted at the Brompton Clinic, results demonstrated that our phage mix reduced CFU levels upon simultaneous intranasal

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administration (six mice in each of the treatment and control groups) and also when administered 24 hours post-bacterial infection (seven mice in the treatment group and eight mice in the control group) using a standard strain of *P. aeruginosa*, Pa01.

We were granted an advisory meeting with the MHRA in the first quarter of 2014 to discuss our plans and intend to move the AB-PA01 compound into additional preclinical testing in preparation for a Phase 1/2 clinical trial in CF patients. We also sought advice on the acceptability of CMC plans. The MHRA concurred with our approach and plans as presented, including a first-in-man dose ranging clinical trial in CF patients. We have completed product candidate selection and are currently conducting manufacturing process development and scale-up with the goal of initiating inhalation toxicology studies in the first quarter of 2017 and completing such studies within approximately six months thereafter. We plan to initiate a Phase 1 single-ascending dose study in CF patients during the second half of 2017 and currently expect to complete that study within approximately 12 months thereafter.

We are also currently evaluating our *P. aeruginosa* phages in preclinical animal models of chronic rhinosinusitis in collaboration with the University of Adelaide. Pending the outcome of this study, we also expect to move AB-PA01 into a chronic rhinosinusitis study in Australia in the second half of 2017. We expect the study to be similar in design to our current Phase 1 study of AB-SA01 in chronic rhinosinusitis, except the AB-PA01 study will target *P. aeruginosa* in chronic rhinosinusitis patients.

If we achieve successful proof of concept studies, we may consider developing this compound for the treatment of other acute and chronic lung infections, such as ventilator associated bacterial pneumonia, or VABP, and chronic obstructive pulmonary disease, or COPD. *P. aeruginosa* is the predominant pathogen in these indications.

AB-CD01: Gastrointestinal (GI) Infection Caused by C. difficile, or CDI

From 2000 through 2007, deaths in the United States from CDI increased over 400%. Over 90% of such deaths occur in hospitalized or confined patients over the age of 65. Global Data estimates that the major European Union and United States markets for CDI therapies grew to more than $314 million in 2011 and they are expected to grow to more than $500 million by 2019.

According to the CDC almost 250,000 people each year require hospitalization for CDI and at least 14,000 people die each year in the United States from CDI. The CDC also estimates that 20 40% of CDI recurs with standard antibiotic treatment. We are actively working with researchers at the University of Leicester to develop a phage therapeutic that targets and kills *C. difficile*. We believe that orally delivered phages are well suited to treat CDI. Within this collaboration, researchers at the University of Leicester have discovered phages that have been shown to be effective *in vitro* and *in vivo* against clinically-relevant strains of *C. difficile* isolated from around the world. These same researchers have also shown phage cocktails to be effective in preventing *C. difficile* biofilm formation *in vitro*. While current pathogenic strains of *C. difficile* are not yet antibiotic-resistant, the CDC has categorized *C. difficile* as an urgent threat and has stated that CDI requires urgent and aggressive action. We believe that there is a significant market opportunity for our product in treating this infection.

Preclinical studies are underway to select and optimize our phage cocktail and manufacturing strains as well as evaluate their efficacy in animal models.

Prior Clinical Development

In 2010, our wholly owned subsidiary, Biocontrol Ltd, reported a double-blind placebo-controlled, randomized Phase 1/2 clinical trial targeting chronic ear infections (otitis) caused by *P. aeruginosa*. To our knowledge, this was the first randomized placebo-controlled efficacy trial of bacteriophage therapy. Results were published demonstrating decreasing levels of *P. aeruginosa* in the ear and improvement of clinical condition with a single input dose of 2.4 nanograms of bacteriophage preparation. While this was a small trial (n=24), changes from baseline at the end of the trial in the test group (n=12) were statistically significant for both clinical condition (p=0.001) and bacterial load (p=0.016). No significant changes were seen in the control group (n=12) compared to baseline at the end of the trial. Difference between test and control groups was statistically significant by analysis by covariance on day 21 for bacterial count (p=0.0365). These results will need to be validated in larger well-controlled trials.

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Anti-Infective Therapeutics Market

The market opportunity for antibiotics is large, with the market estimated to reach $40.3 billion in annual sales globally in 2015. Almost one in every five deaths worldwide occurs as a result of infection and, according to the World Health Organization, or WHO, many bacterial infections will become difficult or impossible to cure as the efficacy of current antibiotic drugs wanes. Despite the advances in antimicrobial and vaccine development, infectious diseases still remain as the third-leading cause of death in the United States and the second-leading cause of death worldwide.

The number of new antibiotics approved by the FDA and other global regulatory authorities has declined consistently over the last two decades. According to the PEW Charitable Trusts report, as of March 2016 there are an estimated 37 new antibiotics in clinical development for the U.S. market. Historically, the success rate from Phase 1 to marketing approval is only 1 in 5 for infectious disease products. We therefore believe there is a need for new approaches to treat serious bacterial infections. Hospital-acquired (nosocomial) infections are a major healthcare problem throughout the world, affecting developed countries as well as resource-poor countries. The WHO reports that hospital-acquired infections are among the major causes of death and increased morbidity among hospitalized patients and estimates that more than 1.4 million people per year worldwide suffer from infectious complications from a hospital stay.

A recent CDC report also cites that in the United States, between 5 and 10% of all patients admitted to a hospital will be affected by a hospital-acquired infection during their stay, typically requiring extended stays and additional care. There is also a significant risk of death from such infections. In the United States, the CDC estimates that approximately 99,000 people die from hospital-acquired infections each year. The Cystic Fibrosis Foundation estimates that *P. aeruginosa* accounts for 10% of all hospital-acquired infections.

Compounding the above situations is the alarming and continuing rise in the prevalence of antibiotic-resistant bacterial infections. This, coupled with the lack of new antibiotics in current discovery and development pipelines, has generated a significant clinical management problem worldwide, leading to increases in morbidity and mortality due to these antibiotic-resistant bacteria as well as increases in healthcare costs.

The first of these antibiotic-resistant infections to reach epidemic proportions was caused by the Gram-positive bacterium *S. aureus*. *S. aureus* resistance to a broad range of antibiotics has necessitated the use of expensive and potentially toxic drugs of last resort , most notably vancomycin. Antibiotic-resistant forms of *S. aureus*, usually termed MRSA, VISA (vancomycin-intermediate *S. aureus*), or VRSA (vancomycin-resistant *S. aureus*), can be extremely challenging to treat. Although several antibiotics targeting *S. aureus* have been developed, rapidly developing bacterial resistance has been noted for all of these including linezolid, daptomycin and tigecycline. On the basis of historical evidence, resistance to these existing products is likely to increase over time, and this picture is further complicated by the reduced efficacy of conventional antibiotics against *Staphylococcus* biofilms.

Typically, *S. aureus* infection causes a variety of suppurative (pus-forming) infections and toxinoses (lesions) in humans. It causes superficial skin lesions such as boils, styes and furuncles; more serious infections such as pneumonia, mastitis, phlebitis, meningitis and urinary tract infections; and deep-seated infections, such as osteomyelitis and endocarditis. *S. aureus* is the leading cause of wound infections, in particular, hospital-acquired (nosocomial) infection of surgical wounds and infections associated with indwelling medical devices. *S. aureus* is the leading pathogen in healthcare-associated infections in the United States as a whole, accounting for 30.4% of surgical site infections, or SSI, and 15.6% of such infections overall.

Infections also occur in connection with CF, which is a genetic disease affecting primarily Caucasians of northern European descent. According to the Cystic Fibrosis Foundation, there are approximately 50,000 cases of CF in North America and Europe. *P. aeruginosa* opportunistically infects the mucous membranes, primarily the lungs, of CF patients and quickly grows out of control, resulting in pneumonia. *P. aeruginosa* infections are notoriously resistant to known antibiotics, and treatment may be further complicated by the formation of biofilms. Biofilms are organized structures of microorganisms growing on solid surfaces (such as lung tissue) and often limit access of antibiotics to the covered tissues. Since phages attack bacteria in a manner independent of chemical antibiotic resistance mechanisms and can infect bacteria growing in biofilms, we believe that *P. aeruginosa* infection among CF patients represents a compelling indication to pursue. The

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availability of *Pseudomonas*-specific phages along with validated animal models of *P. aeruginosa* lung infections has contributed to the development of our bacteriophage program in CF.

Anti-Infective Treatments with Bacteriophages

Background

The dramatic rise in antibiotic resistance, the appearance of an increasing number of new superbugs and the lack of new antibiotics in the pipeline has prompted calls to action from many of the world s major health bodies such as the CDC and the WHO, who warn of an antibiotic cliff and a post-antibiotic era. In 2009, the European Antimicrobial Resistance Surveillance System, or EARSS, concluded that the loss of effective antimicrobial therapy increasingly threatens the delivery of crucial health services in hospitals and in the community. This conclusion was reinforced by The Antimicrobial Availability Task Force, or AATF, of the Infectious Diseases Society of America, or IDSA, and the European Centre for Disease Prevention and Control, or ECDC, in conjunction with the European Medicine Agency, or EMA. Clearly, there is a pressing need to find alternative antibacterial therapies.

Bacteriophage therapy has the potential to be an alternative method of treating bacterial infection. Phages are ubiquitous environmental viruses that grow only within bacteria. The name bacteriophage translates as eaters of bacteria and reflects the fact that as they grow, phages kill the bacterial host by multiplying inside and then bursting through the cell membrane in order to release the next generation of phages. Phages can differ substantially in morphology and each phage is active against a specific range of a given bacterial species. Phages were first discovered in 1915 at the Institut Pasteur and were shown to kill bacteria taken from patients suffering from dysentery. Furthermore, it was noted that phage numbers rose as patients recovered from infection, suggesting a direct association.

Life Cycle of a Bacteriophage

Until the discovery of effective antibiotics, phages were used as an effective means of combating bacterial infection. When broad-spectrum antibiotics came into common use in the early 1940s, phages were considered unnecessary, with antibiotics being seen for many years as the answer to bacterial disease. This attitude persisted until the development of the wide-ranging, and in some cases total, resistance to antibiotics seen within the last 10 years.

Phages have the potential to provide both an alternative to, and a synergistic approach with, antibiotic therapy. Since they use different mechanisms of action, phages are unaffected by resistance to conventional antibiotics. Phages containing certain enzymes also have the ability to disrupt bacterial biofilms, thus potentiating the effect of chemical antibiotics when used in combination with them.

Our Strategy

Our strategy is to use techniques of modern biotechnology and current state-of-the-art practices for drug development in concert with existing regulatory guidance to develop a pipeline of bacteriophage products that will destroy bacteria such as MRSA, which are resistant to antibiotics. Our business strategy will apply state-of-the-art techniques in molecular biology and in clinical trial design to build upon the long successful history of using phages therapeutically to treat and cure infections.

We supplement our internal resources with world-class scientific and medical collaborations throughout the world. For example, through a collaboration with The University of Adelaide in Australia and the University

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Hospital Ghent in Belgium, we conducted preclinical studies showing the ability of *S. aureus* phage preparations to kill over 140 clinical isolates from chronic rhinosinusitis patients demonstrating activity of greater than 90%. Furthermore, a *S. aureus* mixture was shown to be safe and efficacious in a preclinical sheep model of chronic rhinosinusitis. A Phase 1 clinical trial for this program is being conducted at the University of Adelaide s Queen Elizabeth Hospital for the treatment of patients suffering from chronic rhinosinusitis associated with S. *aureus* infection. Enrollment has been completed and we announced topline safety and tolerability results in October 2016. A complete study report is expected by the end of 2016. In August 2016, we tested AB-SA01 against 90 *S. aureus* clinical isolates from chronic rhinosinusitis patients located in Belgium and showed similar activity to isolates obtained from Australian patients, highlighting the diverse geographic activity of our phage cocktail.

In collaboration with the U.S. Army, we are conducting a Phase 1 safety study under an IND that we believe will support the further development of a treatment for *S. aureus* infections for wound and skin infections. We reported topline safety and tolerability results in September 2016 and expect a complete study report by the end of 2016.

We collaborate with the Royal Brompton Hospital in London where we have demonstrated that a candidate phage product can survive nebulization, was effective in killing over 83% of recent clinical *P. aeruginosa* isolates, and in preclinical mouse models demonstrated that a phage mixture dose-dependently clears *P. aeruginosa* infection from the lung and reduced inflammation.

We have completed selection of the phages for drug product selection for AB-PA01, and in conjunction with the Brompton Hospital, we would expect to conduct a Phase 1/2 study using AB-PA01 to treat CF patients with *P. aeruginosa* lung infections.

Acquisitions

In January 2011, we completed the acquisition of Biocontrol Ltd, with the goal of developing their phage therapy programs using funding from the sale of our legacy gene therapy assets. Under the terms of our acquisition of Biocontrol Ltd, we issued 456,344 shares of our common stock to the stockholders of Biocontrol Ltd with a total fair value of approximately $8.6 million as of January 6, 2011, resulting in Biocontrol s former stockholders owning approximately 50% of our outstanding equity securities at the time. As a condition to closing the acquisition, Biocontrol Ltd raised approximately £200,000 (US$310,000) in working capital for use by us.

In November 2012, we completed the acquisition of Special Phage Holdings Pty Ltd, a company based in Australia, which we refer to as SPH, with the goal of combining SPH s research on addressing the rapidly escalating problem of antibiotic resistance through the development of a series of bacteriophage-based treatments into our own development programs. We acquired SPH in exchange for shares of our common stock pursuant to the terms of a Stockholder Sale Agreement and a Managers Warranty Deed.

In connection with our acquisition of SPH, we entered into certain other arrangements, including the repayment under a Loan Repayment Deed (as amended) of a $770,000 loan originally made by Cellabs Pty Ltd, or Cellabs, an Australian company, to SPH, a consulting agreement with Dr. Anthony Smithyman and the payment of $3,017 per month to Cellabs for our laboratory space in Australia through December 31, 2015. Under the terms of the Loan Repayment Deed, the loan from Cellabs to SPH was to be repaid and fully satisfied partly in cash and partly by issuing 40,000 shares of our common stock to Cellabs. As of December 31, 2015, $350,000 has been paid by us to Cellabs and all 40,000 shares have been issued. We paid the remaining balance of $200,000 under the terms of the Loan Repayment Deed in December 2013. The SPH acquisition also included several phage therapy projects which had reached the pre-clinical or animal study stage, including the Brompton Hospital CF study, the Adelaide University

MRSA chronic rhinosinusitis study and the University of Leicester *C. difficile* project. We believe that acquisition of SPH brought substantial phage scientific expertise and know-how to us.

In January 2016, we entered the Novolytics Purchase Agreement, pursuant to which we acquired all rights, title and interest to two families of patents. The first patent family is titled Anti-bacterial compositions and has been granted in Australia and China, with prosecution pending in the United States and other countries. The second patent family is titled Novel bacteriophages and the prosecution is pending in the United States

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and other countries. We also received clinical isolates for *S. aureus* which will bolster our libraries of clinically relevant strains. Additionally, we received know-how relating to certain formulation processes. We also have access to all previous dialogue between Novolytics and various regulatory organizations including the MHRA.

In connection with the Novolytics Purchase Agreement, we paid cash to Novolytics to cover expenses incurred in connection with winding up its phage-related business, as well as warrants to the stockholders of Novolytics to purchase up to an aggregate of 170,000 shares of our common stock, each with an exercise price of $12.00 per share. Pursuant to the terms of the Novolytics Purchase Agreement, we granted certain registration rights covering the resale of the shares of common stock underlying such warrants.

Strategic Alliances and Research and License Agreements

As discussed below, we have established collaborations with the U.S. Army and the University of Leicester, which provide us with access to the considerable scientific, developmental, and regulatory capabilities of our collaborators. We believe that our collaborations contribute to our ability to rapidly advance our product candidates, build our product platform and concurrently progress a wide range of discovery and development programs.

Global R&D Agreement with U.S. Army

In June 2013, we entered into a Research and Development Agreement with the U.S. Army Medical Research and Materiel Command. The Research and Development Agreement focuses on developing bacteriophage therapeutics to treat at least three types of infections: *S. aureus*, *E. coli* and *P. aeruginosa*. The initial indication will be wounds and skin infections from *S. aureus*, which is the leading pathogen in healthcare-associated infections in the United States as a whole, accounting for 30.4% of surgical site infections.

We retain global regulatory ownership and commercial rights to all products developed by us under the Research and Development Agreement. The U.S. Army Medical Research and Materiel Command will have the right to retain a non-exclusive license to use any products developed by or on behalf of the U.S. Government for non-commercial uses. We also have the rights to exclusively license any intellectual property developed by the U.S. Army Medical Research and Materiel Command under the collaboration on terms to be agreed upon.

The Research and Development Agreement expires in June 2018 and can be terminated by either the U.S. Army Medical Research and Materiel Command or us upon 60 days written notice to the other party at any time.

University of Leicester Development Agreements

In April and September 2013, we entered into a collaboration agreement and a license agreement, respectively, with the University of Leicester to develop a phage therapy that targets and kills *C. difficile*.

Under these agreements, which we refer to collectively as the Leicester Development Agreements, we are funding the University of Leicester to carry out *in vitro* studies and animal model development work to identify bacteriophage to resolve *C. difficile* infections. We have licensed related patents, materials and know-how from the University of Leicester. Under the Leicester Development Agreements, the University of Leicester will provide the bacteriophage and act as overall project coordinator for preclinical studies. All rights, title and interest to any intellectual property developed under the Leicester Development Agreements belong to us. Under the Leicester License Agreement, we have exclusive rights to certain patents and materials owned by the University of Leicester, as well as non-exclusive licenses to related know-how.

The collaboration agreement expires in November 2018 and is terminable by either party upon (a) material breach by the other party, subject to a 90-day cure period, (b) the inability of the principal investigator to continue the collaboration or (c) our bankruptcy or winding up of our operations or, commencing on November 13, 2016, with 180 days notice.

Pursuant to the Leicester License Agreement, we paid an up-front fee and will pay the University of Leicester royalties based on product sales and make certain milestone payments based on product development. We are

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also required to pay minimum annual fees, which reduce future milestone payments. In the event that we sublicense a product created under the Leicester Development Agreements, we have agreed to pay the University of Leicester certain milestone payments or a certain percentage of any sublicense revenue received by us for the attainment of such milestone, as well as a certain percentage of all royalty payments we receive from any sublicensees.

The license agreement expires on the later of the expiration of the licensed patents or September 2028, and is terminable by us at any time upon 60 days notice, by the University of Leicester (a) if we legally challenge the validity or ownership of any of the licensed patents, (b) if we fail to pay the fees, milestones or royalties due under the license agreement or (c) if we fail to make substantial commercial process and agree with Leicester that we will be unable to do so. The license agreement is also terminable by either party upon the material breach by the other party (subject to a 30-day cure period) or upon the other party s bankruptcy or insolvency.

License Agreement with United Kingdom Secretary of State for the Department of Health

In January 2011, upon completion of our acquisition of Biocontrol Ltd., we assumed a license agreement entered into in March 2007 between Biocontrol Ltd. and the Health Protection Agency, Centre for Emergency Preparedness and Response, to use certain intellectual property rights to develop treatments for bacterial biofilm infections. The agreement was subsequently assigned to the United Kingdom Secretary of State for the Department of Health, or DoH.

Under the license agreement, we have obtained exclusive rights to a patent portfolio related to the use of bacteriophages combined with biofilm-disrupting agents in treating biofilm infections. In consideration for the exclusive license, we may be required to pay to the DoH certain milestone payments in the aggregate of up to £10,000 per product, as well as single digit percentage royalty on net sales of products incorporating licensed intellectual property.

The license agreement shall remain in full force and effect until the expiration of the last patent exclusively licensed under the license agreement. If we default on any milestone or royalty payments, or upon breach by us of certain other terms of the license agreement, the DoH may either terminate the license agreement immediately upon written notice or modify the license to be non-exclusive upon 30 days written notice.

Intellectual Property

General

Our goal is to obtain, maintain and enforce patent protection for our product candidates, formulations, processes, methods and any other proprietary technologies, preserve our trade secrets and operate without infringing on the proprietary rights of other parties, both in the United States and in other countries. Our policy is to actively seek to obtain, where appropriate, the broadest intellectual property protection possible for our current product candidates and any future product candidates, proprietary information and proprietary technology through a combination of contractual arrangements and patents, both in the United States and abroad. However, patent protection may not afford us with complete protection against competitors who seek to circumvent our patents.

We also depend upon the skills, knowledge, experience and know-how of our management and research and development personnel, as well as that of our advisors, consultants and other contractors. To help protect our

proprietary know-how, which is not patentable, and for inventions for which patents may be difficult to enforce, we currently and will in the future rely on trade secret protection and confidentiality agreements to protect our interests. To this end, we require all of our employees, consultants, advisors and other contractors to enter into confidentiality agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries and inventions important to our business.

As of November 9, 2016, we owned or had exclusive license rights to a total of 65 patents and applications: five U.S. patents, seven U.S. patent applications, 39 foreign patents, and 14 foreign patent applications, expiring on various dates between 2024 and 2036. These patents and applications cover our lead phage-therapeutic programs and use thereof, the sequential use of bacteriophages in combination with

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conventional antibiotics, genetic sequence variations, biofilm disrupting agents, methods to reduce antibiotic resistance, methods to design therapeutic combination panels of bacteriophage, disinfection methods using bacteriophages, and bacteriophage mutants having increased bacterial host spectra.

US 7758856 and national patents within the EU deriving from PCT WO2004062677; Bacteriophage for the treatment of bacterial biofilms

Under an existing license from the United Kingdom Secretary of State for the Department of Health (DoH), we have exclusive rights to a patent portfolio related to the use of bacteriophages combined with biofilm-disrupting agents in treating biofilm infections. This portfolio includes one issued patent in the United States and a patent granted in Europe (EP1587520 is validated in France, Germany, Netherlands, Switzerland, Liechtenstein and the United Kingdom). Claims issued in these patents include those directed to compositions and methods related to agents that are able to facilitate the penetration of biofilms, and their combination with therapeutic bacteriophage preparations. The U.S. patent is expected to expire in December 2026 (absent any extensions). The foreign patents are expected to expire in January 2024 (absent any extensions).

US 7807149, US 8105579, US 8388946, continuation application and national filings deriving from PCT WO2005009451; Bacteriophage containing therapeutic agents

Through our wholly owned subsidiary, Biocontrol Ltd, we own three granted U.S. patents and one pending U.S. continuation patent application (US 13/757655) with claims directed generally to bacteriophage compositions, therapeutic methods of using bacteriophages, and methods of treating bacterial infections by sequentially administering bacteriophages in combination with conventional antibiotics. The pending U.S. continuation application relates generally to panels of bacteriophages with different strain specificities for bacterial infections. Corresponding patents have been granted in Australia (AU2004258731), Europe (EP1663265 and EP2570130 both patents are validated in the United Kingdom, Switzerland, Liechtenstein, Germany, Spain, France, Italy and the Netherlands), Japan (JP5731727 and JP5856556) and Canada (CA2533352). Claims issued in these patents include those directed to therapeutic and non-therapeutic applications of bacteriophage and the sequential use of antibiotics to treat bacterial infections. U.S. patents are expected to expire from July 2024 to March 2027 (absent any extensions). The foreign patents are expected to expire in July 2024 to March 2027 (absent any extensions).

US 8475787, continuation application and national filings deriving from PCT WO2008110840; Beneficial effects of bacteriophage treatment

Through our wholly owned subsidiary, Biocontrol Ltd, we own one granted U.S. patent (8475787), and one pending continuation application (14/625049). This patent family broadly relates to bacteriophage-induced induction of antibiotic sensitivity in a bacterial target, such as *P. aeruginosa*. The granted U.S. patent is expected to expire in July 2029 (absent any extensions). Corresponding patents have been granted in Australia (AU2008224651), Europe (EP2136826 validated in the United Kingdom, Switzerland/Liechtenstein, Germany, Spain, France, Italy and the Netherlands), and Japan (JP5988417 and JP6004543). A related Canadian application (CA2680108) is currently pending. Foreign patents in this family are expected to expire in March 2028 (absent any extensions).

PCT WO2013/164640 (United Kingdom earliest priority filing 1207910.9); Therapeutic bacteriophage compositions

Through our wholly owned subsidiary, Biocontrol Ltd, we own a Patent Cooperation Treaty, or PCT, application relating to the design of effective bacteriophage combinations and elimination of antagonistic effects between said bacteriophage. The PCT application published on November 7, 2013, and following International Preliminary Examination a positive patentability opinion issued. National/regional phase applications are currently pending in the U.S. (US14/398384), Canada (CA2871986), Europe (EP2874635), Japan (JP2015/523850), and Australia (AU2013255583). Patents issuing from this PCT, if any, are expected to expire in May 2032 (absent any extensions).

PCT WO2009/044163 (United Kingdom earliest priority filing 0719438.4); Anti-bacterial compositions

Pursuant to the terms of the Asset Purchase Agreement with Novolytics Ltd., we acquired and currently own one U.S. continuation application (14/686315), relating to methods for killing/treating *Staphylococcus aureus*

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and MRSA, among other bacteria, using a combined bacteriophage K and bacteriophage P68 composition. A corresponding patent has been granted in Australia (AU2008306626) and China (CN101835384) and related applications are pending in Australia (AU2015264918), Japan (JP2015/007087), Canada (CA2700646) and Europe (EP2197284). The granted foreign patents are expected to expire October 2028 (absent any extensions).

PCT WO2013/068743 (United Kingdom priority filing 1119167.3); Novel bacteriophages

Pursuant to the terms of the Asset Purchase Agreement with Novolytics Ltd., we acquired and currently own a U.S. patent application (14/356869) relating to *Staphylococcus aureus* and MRSA therapeutics, and in particular Phage K mutants capable of targeting an increased number of *Staphylococcus aureus* strains when compared to wild-type Phage K, as well as uses of said mutant. Related applications are also pending in Australia (AU2012335397), Canada (CA2890450), Japan (JP 2014/533943) and Europe (EP2776559). Any granted patents will expire in November 2033.

US 15/237496 (converted from United States provisional filing 62/204915); Therapeutic bacteriophage compositions

We own U.S. patent application 15/237496, which is directed to our AB-SA01 bacteriophage panel, mutants thereof, and methods of treating *Staphylococcus aureus* infections (including MRSA) comprising the use of same. Corresponding foreign applications are being pursued by way of a parallel PCT application. Any granted patent is expected to expire in August 2036 (absent extensions).

Our success in preserving market exclusivity for our product candidates relies on patent protection, including extensions to this where appropriate, and on data exclusivity relating to an approved biologic. This may be extended by orphan drug and/or pediatric use protection where appropriate. Once any regulatory period of data exclusivity expires, depending on the status of our patent coverage, we may not be able to prevent others from marketing and selling biosimilar versions of our product candidates. We are also dependent upon the diligence of our appointed agents in national jurisdictions, acting for and on our behalf, which manage the prosecution of pending domestic and foreign patent applications and maintain granted domestic and foreign patents.

Competition

We operate in highly competitive segments of the biotechnology and biopharmaceutical markets. We face competition from many different sources, including commercial pharmaceutical and biotechnology enterprises, academic institutions, government agencies and private and public research institutions all seeking to develop novel treatment modalities for bacterial infections. Many of our competitors have significantly greater financial, product development, manufacturing and marketing resources than we do. Large pharmaceutical companies have extensive experience in clinical development and obtaining regulatory approval for drugs. In addition, many universities and private and public research institutes are active in antibacterial research, some in direct competition with us. We also may compete with these organizations to recruit scientists and clinical development personnel.

There are a handful of small biotechnology companies developing bacteriophage products to treat human diseases. Other than our ongoing clinical trials there is, to our knowledge, one corporate-sponsored clinical trial currently enrolling. A French biotechnology company, Pherecydes Pharma, is acting as clinical trial sponsor of a Phase 1/2 clinical trial in Europe of a phage therapy for the treatment of burn wounds infected with either *E. coli* and *P. aeruginosa*, referred to as PhagoBurn. This clinical trial is a randomized, multi-center open label study to assess

tolerance and efficacy of local treatment with a bacteriophage cocktail. A multi-center clinical trial also sponsored by Pherecydes Pharma evaluating a bacteriophage cocktail versus placebo for diabetic foot ulcers, is listed on clinicaltrials.gov as active but not yet enrolling. To our knowledge, a small number of biotechnology companies, including Synthetic Genomics and LytPhage, Inc., as well as academic institutions, have earlier stage discovery programs utilizing synthetic biology approaches to genetically modify bacteriophages to remove or input genes to improve therapeutic properties such as increases to the bacterial host range to infect a larger number of bacterial strains and decrease the need for using multiple phages in a product.

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A related approach to treating *Staphylococcus* infections is being pursued by Contrafect Corporation using a bacteriophage lysin (a hydrolytic enzyme produced by bacteriophages) to treat *S. aureus* bacteremia (infection in the blood). Contrafect has recently completed a Phase 1 intravenous single dose escalation study in healthy volunteers.

Our bacteriophage programs may compete with or be synergistic with currently approved antibiotics, and experimental approaches such as novel antibiotics, antimicrobial peptides, antimicrobial vaccines, metals, antisense, monoclonal antibodies and possibly microbiome manipulation. For example, Seres Therapeutics is developing a single-dose capsule (SER-109) consisting of bacterial spores to treat recurrent CDI (*Clostridium difficile* infection). In May 2015, Seres initiated a multi-center, randomized, placebo-controlled Phase 2 clinical trial, to assess the efficacy and safety of SER-109. SER-109, or similar products that may be in development by third parties, could prove to be competitive to or used in conjunction with a bacteriophage therapeutic approach.

Manufacturing and Supply

We have developed our own manufacturing capabilities at a facility in Ljubljana, Slovenia that is leased by our wholly owned subsidiary, AmpliPhi, Biotehnolo ke Raziskave in Razvoj, d.o.o. We believe that our facility complies with applicable cGMP regulations, which require, among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation. Pharmaceutical product manufacturers and other entities involved in the manufacture and distribution of approved pharmaceutical products are required to register their establishments with the FDA, and certain state agencies, including the applicable government agency where the facility is located, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws.

After conducting a global search, we elected to proceed with establishing a wholly owned cGMP compliant manufacturing facility in Ljubljana, Slovenia. Upon final product selection, we plan to manufacture each of our product candidates in this facility. We have been able to access and hire highly skilled process development and phage manufacturing expertise and believe that we have control of our proprietary platform from phage identification through final product fill and finish. Our facility is comprised of approximately 4,000 sq. ft. of laboratory and office space, where we produce cGMP clinical trial supplies for our current and planned clinical trials. We believe this facility will be sufficient to meet our manufacturing needs through initial Phase 3 clinical trials. Our current formulation for AB-SA01 is intended for sinonasal or topical delivery via a nasal wash solution or dressed bandage. We plan to further optimize future formulations of our product candidates.

Our facility in Ljubljana, Slovenia is subject to inspection and regulation by JAZMP, the Slovenian agency that regulates and supervises pharmaceutical products in Slovenia. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer or holder of an approved New Drug Application/Biologics License Application, including withdrawal of the product from the market. In addition, changes to the manufacturing process generally require prior regulatory approval before being implemented and other types of changes to the approved product, such as adding new indications and additional labeling claims, are also subject to further regulatory review and approval, including approval by the FDA.

Commercialization and Marketing

We have full worldwide commercial rights to all of our phage-based product candidates to treat drug-resistant bacterial infections, including our product candidates: AB-PA01 for the treatment of CF patients with *P. aeruginosa* lung infections; AB-SA01, for the treatment of *S. aureus* infections; and AB-CD01 for the prevention or treatment of *C. difficile* infections. We believe we can maximize the value of our company by retaining substantial global

commercialization rights to these product candidates and, where appropriate, entering into partnerships to develop and commercialize our other product candidates. We plan to build a successful commercial enterprise using a sales team in the United States and possibly other major markets and with partners in other territories.

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We have not yet established a sales, marketing or product distribution infrastructure because our lead candidates are still in early clinical development. We generally expect to retain commercialization and co-commercialization rights in the United States for all of our product candidates for which we receive marketing approvals. Subject to receiving marketing approvals, we intend to explore building the necessary marketing and sales infrastructure to market and sell our current product candidates. We also intend to explore the use of a variety of distribution agreements and commercial partnerships in those territories where we do not establish a sales force for any of our product candidates that obtain marketing approval.

Government Regulation and Product Approval

Government authorities in the United States, at the federal, state and local level, and other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, post-approval monitoring and reporting, marketing and export and import of products such as those we are developing.

United States Product Development Process

In the United States, the FDA regulates biological products under the Federal Food, Drug and Cosmetic Act, or FDCA, and the Public Health Service Act, or the PHS Act, and related regulations. Biological products are also subject to other federal, state and local statutes and regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable United States requirements at any time during the product development process or approval process, or after approval, may subject an applicant to administrative or judicial sanctions. FDA sanctions could include refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a biological product may be marketed in the United States generally includes the following:

completion of preclinical laboratory tests, animal studies and formulation studies according to good laboratory practice requirements, or GLP, or other applicable regulations;
submission to the FDA of an IND, which must become effective before human clinical trials may begin in the United States;
performance of adequate and well-controlled human clinical trials according to the FDA s regulations commonly referred to as good clinical practices, or GCPs, and any additional requirements for the protection of human research subjects and their health information, to establish the safety and efficacy of the proposed biological product for its intended use or uses;
submission to the FDA of a Biologics License Application, or BLA, for a new biological product;
satisfactory completion of an FDA inspection of the manufacturing facility or facilities where the biological product is produced to assess compliance with the FDA s cGMP regulations, to assure that the facilities, methods and controls are adequate to preserve the biological product s identity, strength, quality and purity;
potential FDA audit of the nonclinical study sites and clinical trial sites that generated the data in support of the BLA; and
FDA review and approval, or licensure, of the BLA which must occur before a biological product can be marketed or sold.

The lengthy process of seeking required approvals and the continuing need for compliance with applicable statutes and regulations require the expenditure of substantial resources even when approvals are inherently uncertain.

The strategies, nature, and technologies of bacteriophage products are different from the conventional antibiotic therapy products. From the regulatory requirements established to ensure the safety, efficacy and

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quality of bacteriophage preparations, there are several major points to consider during the development, manufacturing, characterization, preclinical study and clinical trial of bacteriophage. The major issues include:

bacteriophage preparation design (single agent versus phage mixes and wild-type phage versus genetically engineered phage);

proof of concept in development of bacteriophage products;

selectivity of bacteriophage replication and targeting to specific species of bacteria;

relevant animal models in preclinical studies; and

clinical safety and efficacy.

Before testing any compounds with potential therapeutic value in humans, the biological product candidate enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product biology, toxicity and formulation, as well as animal studies to assess the potential safety and activity of the biological product candidate. The conduct of the preclinical tests must comply with federal regulations and requirements including GLP. The sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of the IND. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA places the IND on a clinical hold within that 30 day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a product candidate at any time before or during clinical trials due to safety concerns or non-compliance. Accordingly, we cannot be certain that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such clinical trial.

Clinical trials involve the administration of the product candidate to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by the sponsor. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject inclusion and exclusion criteria and the parameters to be used to monitor subject safety. Each protocol must be submitted to the FDA. Clinical trials must be conducted in accordance with GCP requirements. Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, or ethics committee if conducted outside of the U.S., at or servicing each institution at which the clinical trial will be conducted. An IRB or ethics committee is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB or ethics committee also approves the informed consent form that must be provided to each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. We intend to use third-party Clinical Research Organizations, or CROs, to administer and conduct our planned clinical trials and will rely upon such CROs, as well as medical institutions, clinical investigators and consultants, to conduct our trials in accordance with our clinical protocols. The failure by any of such third parties to meet expected timelines, adhere to our protocols or meet regulatory standards could adversely impact the subject product development program and we remain legally responsible for compliance with applicable laws and regulations governing the conduct of these clinical trials.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

Phase 1: The product candidate is initially introduced into healthy human subjects and tested primarily for safety and dosage tolerance. Absorption, metabolism, distribution and excretion may also be tested.

Phase 2: The product candidate is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product candidate for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.

Phase 3: Clinical trials are undertaken to further evaluate dosage, clinical efficacy and safety in an expanded patient population at geographically dispersed clinical trial sites. These clinical trials are

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intended to establish the overall risk/benefit ratio of the product and provide an adequate basis for product labeling. Generally, two adequate and well-controlled Phase 3 clinical trials are required by the FDA and other regulatory authorities for approval of a marketing application.

Post-approval studies, or Phase 4 clinical trials, may be requested by the FDA as a condition of approval and are conducted after initial marketing approval. These studies are used to gain additional experience from the treatment of patients in the intended therapeutic indication.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA and written safety reports must be submitted to the FDA and the investigators for serious and unexpected adverse events or any finding from tests in laboratory animals that suggest that there may be a significant risk for human subjects. The FDA or the sponsor or, if used, its data safety monitoring board may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB or ethics committee can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB s or ethics committee s requirements or if the pharmaceutical product has been associated with unexpected serious harm to patients. Suspension of a clinical trial due to safety risks attributed to the investigational product will result in termination of the trial and possibly others that are underway.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the physical characteristics of the product candidate as well as finalize a process for manufacturing the product candidate in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents or other impurities with the use of biological products, the PHS Act emphasizes the importance of manufacturing control for products whose attributes cannot be precisely defined. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the sponsor must develop methods for testing the identity, strength, quality, potency, and purity of the final biological product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the biological product candidate does not undergo unacceptable deterioration over its shelf life.

United States Review and Approval Processes

In order to obtain approval to market a biological product in the United States, a BLA that provides data establishing to the FDA s satisfaction the safety and effectiveness of the investigational product candidate for the proposed indication must be submitted to the FDA. The application includes all data available from nonclinical studies and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product s manufacture and composition, and proposed labeling, among other things. The testing and approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all.

Each BLA must be accompanied by a significant user fee. The FDA adjusts the user fees on an annual basis. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. Additionally, no user fees are assessed on BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

The FDA has 60 days from its receipt of a BLA to determine whether the application will be accepted for filing based on the agency s threshold determination that the application is sufficiently complete to permit substantive review. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. After the BLA is accepted for

filing, the FDA reviews it to determine, among other things, whether the proposed product is safe and effective for its intended use, has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMP to assure and preserve the product s identity, safety, strength, quality, potency, and purity. The FDA may refer applications for novel product candidates or those that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and, if so, under what conditions. The FDA is not bound by the

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recommendations of an advisory committee, but it considers such recommendations carefully when making decisions. The FDA may ultimately decide that the BLA does not satisfy the criteria for approval. If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. Further, the FDA may require that certain contraindications, warnings or precautions be included in the product labeling.

Special FDA Expedited Review and Approval Programs

The FDA has various programs, including Fast Track designation, accelerated approval and priority review, that are intended to expedite the process for the development and FDA review of drugs that are intended for the treatment of serious or life threatening diseases or conditions and demonstrate the potential to address unmet medical needs. The purpose of these programs is to provide important new drugs and biological products to patients earlier than under standard FDA review procedures.

To be eligible for a Fast Track designation, the FDA must determine, based on the request of a sponsor, that a product is intended to treat a serious or life threatening disease or condition and demonstrates the potential to address an unmet medical need, or if the drug or biological product qualifies as a qualified infectious disease product under the Generating Antibiotic Incentives Now Act, or GAIN Act. The FDA will determine that a product will fill an unmet medical need if it will provide a therapy where none exists or provide a therapy that may be potentially superior to existing therapy based on efficacy or safety factors. We intend to request Fast Track designation for our product candidates if applicable.

Specifically, new drugs and biological products are eligible for Fast Track designation if they are intended to treat a serious or life-threatening condition and demonstrate the potential to address unmet medical needs for the condition. Fast Track designation applies to the combination of the product and the specific indication for which it is being studied. The sponsor of a new drug or biological may request the FDA to designate the drug or biologic as a Fast Track product at any time during the clinical development of the product. Unique to a Fast Track product, the FDA may consider for review sections of the marketing application on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the application, the FDA agrees to accept sections of the application and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the application.

Any product submitted to the FDA for marketing, including under a Fast Track program, may be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. Any product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new drug or biological product designated for priority review in an effort to facilitate the review. Additionally, a product may be eligible for accelerated approval. Drug or biological products studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may receive accelerated approval, which means that they may be approved on the basis of adequate and well-controlled clinical trials establishing that the product has an effect on a surrogate endpoint that is reasonably likely to predict a clinical benefit, or on the basis of an effect on a clinical endpoint other than survival or irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments.

As a condition of approval, the FDA may require a sponsor of a drug or biological product receiving accelerated approval to perform post-marketing studies to verify and describe the predicted effect on irreversible morbidity or mortality or other clinical endpoint, and the drug or biological product may be subject to accelerated withdrawal procedures. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. Fast Track designation, priority review and accelerated approval do not change the standards for approval but may expedite the development or approval process.

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A sponsor can also request designation of a product candidate as a breakthrough therapy. A breakthrough therapy is defined as a drug or biological product that is intended, alone or in combination with one or more other drugs or biological products, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the biological product or drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. Drugs or biological products designated as breakthrough therapies are also eligible for accelerated approval. The FDA must take certain actions, such as holding timely meetings and providing advice, intended to expedite the development and review of an application for approval of a breakthrough therapy. We intend to request breakthrough therapy designation for our product candidates if applicable.

Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Patent Term Restoration and Marketing Exclusivity

Depending upon the timing, duration and specifics of FDA approval of our drugs, some of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch Waxman Amendments. The Hatch Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. However, patent term restoration cannot extend the remaining term of a patent beyond a total of 14 years from the product s approval date. The patent term restoration period is generally one half the time between the effective date of an IND, and the submission date of an NDA or BLA, plus the time between the submission date of an NDA or BLA and the approval of that application. Only one patent applicable to an approved drug is eligible for the extension, and the extension must be applied for prior to expiration of the patent. The United States Patent and Trademark Office, in consultation with the FDA, reviews and approves the application for any patent term extension or restoration.

Pediatric exclusivity is a type of marketing exclusivity available in the U.S. under the Best Pharmaceuticals for Children Act, or BPCA, which provides for an additional six months of marketing exclusivity may be available if a sponsor conducts clinical trials in children in response to a written request from the FDA, or a Written Request. If the Written Request does not include clinical trials in neonates, the FDA is required to include its rationale for not requesting those clinical trials. The FDA may request studies on approved or unapproved indications in separate Written Requests. The issuance of a Written Request does not require the sponsor to undertake the described clinical trials.

Biologics Price Competition and Innovation Act of 2009

The Patient Protection and Affordable Care Act, which included the Biologics Price Competition and Innovation Act of 2009, or BPCIA, amended the PHSA to create an abbreviated approval pathway for two types of generic biologics biosimilars and interchangeable biologic products, and provides for a twelve year data exclusivity period for the first approved biological product, or reference product, against which a biosimilar or interchangeable application is evaluated; however if pediatric clinical trials are performed and accepted by the FDA, the twelve year data exclusivity period will be extended for an additional six months. A biosimilar product is defined as one that is highly similar to a reference product notwithstanding minor differences in clinically inactive components and for which there are no clinically meaningful differences between the biological product and the reference product in terms of the safety, purity and potency of the product. An interchangeable product is a biosimilar product that may be substituted for the reference product without the intervention of the health care provider who prescribed the reference product.

The biosimilar applicant must demonstrate that the product is biosimilar based on data from (1) analytical studies showing that the biosimilar product is highly similar to the reference product; (2) animal studies (including toxicity); and (3) one or more clinical trials to demonstrate safety, purity and potency in one or more appropriate conditions of use for which the reference product is approved. In addition, the applicant must show that the biosimilar and reference products have the same mechanism of action for the conditions of use on the label, route of administration, dosage and strength, and the production facility must meet standards designed to assure product safety, purity and potency.

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An application for a biosimilar product may not be submitted until four years after the date on which the reference product was first approved. The first approved interchangeable biologic product will be granted an exclusivity period of up to one year after it is first commercially marketed, but the exclusivity period may be shortened under certain circumstances. The FDA has issued a number of final and draft guidances in order to implement the law. The guidance documents provide FDA s current thinking on approaches to demonstrating that a proposed biological product is biosimilar to a reference product. The FDA intends to issue additional guidance documents in the future, and has identified considerations in demonstrating interchangeability to a reference product, labeling and nonproprietary naming as several of the issues that it hopes to address in calendar year 2015. Nonetheless, the absence of final guidance documents covering all biosimilars issues does not prevent a sponsor from seeking licensure of a biosimilar under the BPCIA, and the FDA has already approved two biosimilar applications in the United States.

FDA Post-Approval Requirements

Maintaining substantial compliance with applicable federal, state, local, and foreign statutes and regulations requires the expenditure of substantial time and financial resources. Rigorous and extensive FDA regulation of new products continues after approval, particularly with respect to cGMP. We will rely on third parties for the production of commercial quantities of any products that we may commercialize. We and third party manufacturers of our products are required to comply with applicable requirements in the cGMPs, including quality control and quality assurance and maintenance of records and documentation. We cannot be certain that we or our present or future suppliers will be able to comply with the cGMP and other FDA requirements. Other post-approval requirements applicable to biological products include reporting of cGMP deviations that may affect the identity, potency, purity and overall safety of a distributed product, record-keeping requirements, reporting of adverse effects, reporting updated safety and efficacy information, and complying with electronic record and signature requirements. After a BLA is approved, the product also may be subject to official lot release. As part of the manufacturing process, the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official release by the FDA, the manufacturer submits samples of each lot of product to the FDA together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer s tests performed on the lot. The FDA also may perform certain confirmatory tests on lots of some products, such as viral vaccines, before releasing the lots for distribution by the manufacturer. In addition, the FDA conducts laboratory research related to the regulatory standards on the safety, purity, potency, and effectiveness of biological products.

Discovery of previously unknown problems or the failure to comply with the applicable regulatory requirements, by us or our suppliers, may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions and adverse publicity. FDA sanctions could include refusal to approve pending applications, withdrawal of an approval, clinical hold, warning or untitled letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, mandated corrective advertising or communications with doctors, debarment, restitution, disgorgement of profits, or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us.

Biological product manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their facilities with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMPs and other laws. In addition, changes to the manufacturing process or facility generally require prior FDA approval before being implemented and other types of changes to the approved product, such as adding new indications and additional labeling claims, are also subject to further FDA review and approval.

Labeling, Marketing and Promotion

The FDA closely regulates the labeling, marketing and promotion of drugs and biological products, including direct-to-consumer advertising, promotional activities involving the internet, and industry-sponsored scientific and educational activities. While doctors are free to prescribe any product approved by the FDA for any use, a company can only make claims relating to safety and efficacy of a product that are consistent with FDA approval, and the company is allowed to actively market a product only for the particular use and treatment

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approved by the FDA. In addition, any claims we make for our products in advertising or promotion must be appropriately balanced with important safety information and otherwise be adequately substantiated. Failure to comply with these requirements can result in adverse publicity, warning letters, corrective advertising, injunctions and potential civil and criminal penalties.

Other Healthcare Laws and Compliance Requirements

In the United States, our activities are potentially subject to regulation by various federal, state and local authorities in addition to the FDA, including the Centers for Medicare and Medicaid Services, other divisions of the United States Department of Health and Human Services (e.g., the Office of Inspector General), the United States Department of Justice and individual United States Attorney offices within the Department of Justice and state and local governments.

International Regulation

In addition to regulations in the United States, we will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of our future products. Our manufacturing facility in Ljubljana, Slovenia is subject to inspection and regulation by JAZMP, the Slovenian agency that regulates and supervises pharmaceutical products in Slovenia. Whether or not we obtain FDA approval for a product, we must obtain approval of a product by the comparable regulatory authorities of foreign countries before we can commence clinical trials or marketing of the product in those countries. The approval process varies from country to country, and the time may be longer or shorter than that required for FDA approval. The requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from country to country.

Under European Union regulatory systems, marketing authorizations may be submitted either under a centralized or a mutual recognition procedure. The centralized procedure, which is compulsory for medicinal products produced by biotechnology or those medicinal products containing new active substances for specific indications such as the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, viral diseases and designated orphan medicines and optional for other medicines which are highly innovative. Under the centralized procedure, a marketing application is submitted to the European Medicines Agency where it will be evaluated by the Committee for Medicinal Products for Human Use and a favorable opinion typically results in the grant by the European Commission of a single marketing authorization that is valid for all European Union member states within 67 days of receipt of the opinion. The initial marketing authorization is valid for five years, but once renewed is usually valid for an unlimited period.

Pricing and Reimbursement

Although none of our product candidates has been commercialized for any indication, if they are approved for marketing, commercial success of our product candidates will depend, in part, upon the availability of third-party reimbursement from payors at the federal, state and private levels. Third-party payors include government healthcare programs, such as Medicare and Medicaid, private health insurers and managed-care plans. We anticipate third party payors will provide reimbursement for our products. However, these third party payors are increasingly challenging the price and examining the cost effectiveness of medical products and services. In addition, significant uncertainty exists as to the reimbursement status of newly approved healthcare products. We may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost effectiveness of our products. Our product candidates may not be considered cost effective. It is time consuming and expensive for us to seek reimbursement from third party payors. Reimbursement may not be available or sufficient to allow us to sell our products on a competitive and profitable basis.

We expect that there will continue to be a number of federal and state proposals to implement governmental pricing controls and limit the growth of healthcare costs, including the cost of prescription drugs. For example, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act of 2010 (collectively, ACA) enacted in March 2010, was expected to have a significant impact on the health care industry. ACA has resulted in expanded coverage for the uninsured and is expected to help contain overall healthcare costs. With regard to pharmaceutical products, among other things, ACA is expected to expand and increase industry rebates for drugs covered under Medicaid programs and make changes to the coverage requirements under the Medicare Part D program. We cannot predict the impact

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of ACA on pharmaceutical companies as many of the ACA reforms require the promulgation of detailed regulations implementing the statutory provisions which has not yet occurred. In addition, although the United States Supreme Court upheld the constitutionality of most of the ACA, some states have stated their intentions to not implement certain sections of ACA and some members of Congress are still working to repeal ACA. These challenges add to the uncertainty of the changes enacted as part of ACA.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products. Historically, products launched in the European Union do not follow price structures of the U.S. and generally tend to be significantly lower.

Employees

As of September 30, 2016, we had 32 full-time employees.

Facilities

Our principal offices occupy approximately 1,000 square feet of leased office space pursuant to a month-to-month sublease, located at 3579 Valley Centre Drive, Suite 100, San Diego, California 92130. We also lease approximately 700 square feet of lab space in Richmond, Virginia, approximately 5,000 square feet of lab space in Brookvale, Australia, and approximately 6,000 square feet of lab and office space in Ljubljana, Slovenia. We believe our facilities are adequate for our current and near-term needs.

Legal Proceedings

On April 14, 2016, NRM VII Holdings I, LLC, or NRM, filed a complaint against us and the current members of our board of directors in the Superior Court of California, County of San Diego, which complaint was amended on July 25, 2016. NRM, together with its affiliates, is one of our principal stockholders. The amended complaint, which we refer to as the complaint, alleges that we breached the implied covenant of good faith and fair dealing by entering into a scheme to force NRM to convert its shares of Series B redeemable convertible preferred stock into shares of our common stock. The complaint further alleges that the members of the board of directors who are named as defendants breached their fiduciary duty of good faith and loyalty owed to NRM, as one of our stockholders, by participating in this alleged scheme. The complaint seeks unspecified monetary damages and other relief. We refer to the action pending against us and the members of our Board of Directors pursuant to the complaint as the Action .

On November 12, 2016, we entered into a settlement agreement with NRM to settle the Action. Pursuant to the settlement agreement, NRM has agreed to dismiss with prejudice the Action upon receipt of a cash payment of $2.0 million, which payment will be made to NRM by our insurance carrier on or before December 3, 2016.

The settlement agreement contains mutual releases covering all claims that we or our affiliates, or NRM or its affiliates, have or may have against the other party or such other party's affiliates in connection with the Action or

otherwise as of the date of the settlement agreement.

Upon the automatic conversion of NRM's shares of our Series B convertible preferred stock into shares of our common stock on April 8, 2016, we became obligated to pay NRM accrued dividends in the amount of approximately $914,000. The accrued dividends obligation to NRM is reflected in current liabilities on our consolidated balance sheet at September 30, 2016. Upon NRM's receipt of the $2.0 million settlement payment described above, our accrued dividends payment obligation to NRM will be extinguished. We have agreed to repay our insurance carrier an aggregate amount equal to the accrued dividends as follows: $100,000 on December 3, 2016, approximately $204,800 on January 2, 2017, approximately $304,800 on April 3, 2017 and approximately $304,800 on July 3, 2017.

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Corporate Information

We were incorporated under the laws of the State of Washington in March 1989 as a wholly owned subsidiary of Immunex Corporation and began operations as an independent company in 1992 as Targeted Genetics Corporation. In February 2011, we changed our name to AmpliPhi Biosciences Corporation.

Our principal executive offices are located at 3579 Valley Centre Drive, Suite 100, San Diego, California 92130. The telephone number at our principal executive office is (858) 829-0829. Our website address is *http://www.ampliphibio.com*. Our website and the information contained on, or that can be accessed through, our website will not be deemed to be incorporated by reference in, and are not considered part of, this prospectus. You should not rely on our website or any such information in making your decision whether to purchase our securities in this offering.

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MANAGEMENT

The following table sets forth information about our current executive officers and directors.

Name	Age	Position(s)
M. Scott Salka	54	Chief Executive Officer, Director
Steve R. Martin	55	Chief Financial Officer
Wendy S. Johnson	64	Interim Chief Operating Officer, Director
Non-Employee Directors		
Jeremy Curnock Cook[2][3]	67	Chairman of the Board
Louis Drapeau[1][3]	72	Director
Michael S. Perry, Ph.D.[1][2][3]	57	Director
Vijay B. Samant[1]	63	Director
Paul C. Grint, M.D.[2]	58	Director

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.

Executive Officers

M. Scott Salka has served as our Chief Executive Officer and a member of our board of directors since May 18, 2015. Mr. Salka served as the Chief Executive Officer of Aspyrian Therapeutics Inc., a company focused on developing near-infrared photoimmunotherapy therapies, from March 2010 to May 2015. Prior to that, Mr. Salka served as the Chief Executive Officer of Ambit Biosciences Corporation, a publicly traded company that developed a novel platform for discovering small molecule drugs for oncology, autoimmune and inflammatory diseases, that was acquired by Daiichi Sankyo in 2014. During Mr. Salka s tenure at Ambit, he was responsible for transforming the company from a service contract business to a fully-capable drug discovery and development enterprise. Prior to joining Ambit in 2001, Mr. Salka served as the President and Chief executive officer of two privately-held genomics companies, Arcaris, Inc. and 454 Corporation that was sold to Roche in 2007. He also previously co-founded one of the first commercial genomics companies, Sequana Therapeutics, Inc., a pioneer in the effort to commercialize the international Human Genome Project. From February 2012 to March 2014, Mr. Salka served on the board of directors of Sorrento Therapeutics, Inc. and since 2009, Mr. Salka has served on the board of directors of San Diego State University College of Business Administration. He received his M.B.A. from Carnegie Mellon University and his B.S. in finance from San Diego State University. The Nominating and Corporate Governance Committee and the board of directors believe that Mr. Salka s significant experience leading drug development companies, as well as his service as our Chief Executive Officer, qualifies him to serve on our board of directors.

Steve R. Martin has served as our Chief Financial Officer since January 2016. Mr. Martin served as Senior Vice President and Chief Financial Officer of Applied Proteomics, Inc., a molecular diagnostics company, from December 2014 to August 2015. From June 2011 to December 2014, Mr. Martin served as Senior Vice President and Chief Financial Officer of Apricus Biosciences, Inc., a publicly traded pharmaceutical company, and served as the Interim Chief Executive Officer of Apricus from November 2012 through March 2013. From 2008 to January 2011, Mr. Martin served as Senior Vice President and Chief Financial Officer of BakBone Software, a publicly traded software company. During his final 10 months with BakBone until the company s acquisition in January 2011, Mr. Martin also served as BakBone s Interim Chief Executive Officer. From 2005 to 2007, Mr. Martin served as Chief Financial

Officer of Stratagene Corporation, a publicly traded research products and clinical diagnostics company. Mr. Martin s previous experience also includes serving as Controller with Gen-Probe Incorporated, a publicly traded molecular diagnostics company, as well as 10 years with Deloitte & Touche LLP, a public accounting firm. Mr. Martin holds a B.S. degree from San Diego State University and is a certified public accountant.

Wendy S. Johnson has served as our Interim Chief Operating Officer since September 2014 and has served as a member of our board of directors since May 2014. From 2005 to January 2014, Ms. Johnson served as a venture partner at ProQuest Investments, a venture capital firm. From 2006 to January 2014, Ms. Johnson

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served as the President and Chief Executive Officer of Aires Pharmaceuticals, a ProQuest portfolio company. Prior to joining ProQuest, she served as Senior Vice President, Corporate Development, at Salmedix Inc., and she held senior business and corporate development positions at WomenFirst Healthcare, Prizm Pharmaceuticals (Selective Genetics Inc.), Cytel Corp., Synbiotics Corp., and Murex Corp. (Cambridge U.K.). Additionally, Ms. Johnson served as Assistant Director with the Center for Devices and Radiological Health at the FDA. Ms. Johnson received an M.B.A. from Loyola University, an M.S. in clinical microbiology from the Hahnemann Medical School and a B.S. in microbiology from the University of Maryland. The Nominating and Corporate Governance Committee and the board of directors believe that Ms. Johnson s significant experience in pharmaceutical drug development and business development, as well her strong background in microbiology, qualifies her to serve on our board of directors.

Non-Employee Directors

Jeremy Curnock Cook has served as a member of our board of directors since July 1995 and as Chairman of the board of directors since February 1998. From September 2014 to May 2015, he served as our Interim Chief Executive Officer. Mr. Curnock Cook has served as Chairman of International Bioscience Managers Limited, a corporate and investment advisory firm, since 2000, and also currently serves as Managing Director of Bioscience Managers Pty Ltd, a medical sciences fund manager. From 1987 to 2000, Mr. Curnock Cook was a director of Rothschild Asset Management Limited, a corporate and investment advisory company, and was responsible for the Rothschild Bioscience Unit. Mr. Curnock Cook founded the International Biochemicals Group in 1975, which was sold in 1985 to Royal Dutch Shell, where he served as Managing Director until 1987. He also serves as a member of the board of directors of Avita Medical Ltd, Nexus6 Ltd and SeaDragon Ltd, all private companies. Mr. Curnock Cook received an M.A. in natural sciences from Trinity College, Dublin. The Nominating and Corporate Governance Committee and the board of directors believe that Mr. Curnock Cook s significant experience as a board member of multiple biotechnology companies qualifies him to serve on our board of directors.

Louis Drapeau has served as a member of our board of directors since March 2011. Since October 2007 through February 2016, Mr. Drapeau served in various management positions of InSite Vision, a traded ophthalmology drug development company that was acquired in October 2015, including Vice President and Chief Financial Officer and Chief Executive Officer from November 2008 to December 2010. Prior to InSite Vision, he served as Chief Financial Officer, Senior Vice President, Finance, at Nektar Therapeutics, a biopharmaceutical company, from January 2006 to August 2007. Prior to Nektar, he served as Acting Chief Executive Officer from August 2004 to May 2005 and as Senior Vice President and Chief Financial Officer from August 2002 to August 2005 for BioMarin Pharmaceutical Inc. Previously, Mr. Drapeau spent 30 years at Arthur Andersen, including 19 years as an Audit Partner in Arthur Andersen s Northern California Audit and Business Consulting practice, which included 12 years as Managing Partner. Since February 2007, Mr. Drapeau has served as a member of the board of Bio-Rad Laboratories, Inc., a publicly traded pharmaceutical company, and since January 2016, Mr. Dapeau has served as a member of the board of directors of Avita Medical Ltd. Mr. Drapeau received a B.S. in mechanical engineering and an M.B.A. from Stanford University. The Nominating and Corporate Governance Committee and the board of directors believe that Mr. Drapeau s experience with respect to accounting and financial matters qualifies him to serve on our board of directors.

Michael S. Perry, D.V.M., Ph.D. has served as a member of our board of directors since November 2005. Since January of 2016 Dr. Perry has served as Senior Vice President and Chief Scientific Officer of Business Development and Licensing for Novartis AG. From September 2014 to January 2016 he served as Chief Scientific Officer for the Cell and Gene Therapy Unit of Novartis Pharmaceuticals Corporation and from October 2012 to September 2014, he served as Global Head of Stem Cell Therapy and Vice President of the Integrated Hospital Care Franchise for Novartis Pharmaceuticals Corporation. Prior to rejoining Novartis in October 2012, he was a Venture Partner with Bay City Capital, a venture capital firm, from 2005 to September 2012. While serving in this capacity, he concurrently

served as President and Chief Medical Officer at Poniard Pharmaceuticals, Inc., a publicly held drug development company, from 2009 to 2011. Dr. Perry also previously served as Chief Development Officer of VIA Pharmaceuticals, Inc., a publicly held biotechnology company, from 2005 to 2009. Dr. Perry served as Chairman and Chief Executive Officer of Extropy Pharmaceuticals, Inc., a privately held pediatric specialty pharmaceutical company, from

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2003 to 2005. From 2002 to 2003, Dr. Perry served as President and Chief Executive Officer of Pharsight Corporation, a publicly held software and consulting services firm. From 2000 to 2002, Dr. Perry served as Global Head of Research and Development for Baxter Healthcare s BioScience Division (now Baxalta). From 1997 to 2000, Dr. Perry served as President and Chief Executive Officer of SyStemix Inc. and Genetic Therapy Inc., two wholly owned subsidiaries of Novartis Pharma. Dr. Perry served as Vice President of Regulatory Affairs for Novartis from 1994 to 1997. Prior to 1994, Dr. Perry held various management positions with Syntex Corporation (now Roche), Schering-Plough Corporation (now Merck) and BioResearch Laboratories, Inc. Dr. Perry received a Doctor of Veterinary Medicine (DVM), a Ph.D. in biomedical science-pharmacology specialty and an Honours B.Sc. in physics from the University of Guelph in Ontario, Canada. He is also a graduate of the Harvard Business School International Management Forum. Dr. Perry has served as Adjunct Professor in the Gates Center for Regenerative Medicine at the University of Colorado School of Medicine, Anschutz Medical Campus since November 2013. He has served as a member of the board of directors of Arrowhead Research Corporation since December 2011 and as a member of the board of directors of Avita Medical Ltd since February 2013. The Nominating and Corporate Governance Committee and the board of directors believe that Dr. Perry s substantial scientific and medical knowledge, as well as his operational and investing experience, qualifies him to serve on our board of directors.

Vijay B. Samant has served as a member of our board of directors since November 2015. Since November 2000, Mr. Samant has served as President and Chief Executive Officer of Vical, Inc., a developer of biopharmaceutical products for the prevention and treatment of chronic life-threatening infectious diseases. Prior to joining Vical, he had 23 years of diverse U.S. and international sales, marketing, operations, and business development experience with Merck. From 1998 to 2000, he was Chief Operating Officer of the Merck Vaccine Division. From 1990 to 1998, he served in the Merck Manufacturing Division as Vice President of Vaccine Operations, Vice President of Business Affairs and Executive Director of Materials Management. Mr. Samant holds a master s degree in management studies from the Sloan School of Management at the Massachusetts Institute of Technology, a master s degree in chemical engineering from Columbia University, and a bachelor s degree in chemical engineering from the University of Bombay, University Department of Chemical Technology. Mr. Samant has been a member of the board of directors of Vical since 2000, and was a member of the board of directors of Raptor Pharmaceutical Corporation from 2011 to 2014, and was a member of the board of directors for BioMarin Pharmaceutical Inc. from 2002 to 2004. Mr. Samant was a Director of the Aeras Global TB Vaccine Foundation from 2001 to 2010, a member of the Board of Trustees for the National Foundation for Infectious Diseases from 2003 to 2012, and a member of the Board of Trustees for the International Vaccine Institute in Seoul, Korea from 2008 to 2012. The Nominating and Corporate Governance Committee and the board of directors believe that Mr. Samant s significant experience leading biopharmaceutical product development companies, as well his significant sales, marketing, operations, and business development expertise within the biotechnology and pharmaceutical industries, qualifies him to serve on our board of directors.

Paul C. Grint, M.D. has served as a member of our board of directors since November 2015. Since June 2015, Dr. Grint has served as President and Chief Executive Officer of Regulus Therapeutics Inc., a company focused on the discovery and development of microRNA therapeutics. From June 2014 until his appointment as President and Chief Executive Officer of Regulus Therapeutics, Dr. Grint served as Regulus Therapeutics Chief Medical Officer. From February 2011 to June 2014, Dr. Grint served as the President of Cerexa, Inc., a wholly owned subsidiary of Forest Laboratories, Inc., a pharmaceutical company, where he was responsible for the oversight of anti-infective product development. Before that, Dr. Grint served as Senior Vice President of Research at Forest Research Institute, Inc., the scientific development subsidiary of Forest Laboratories, Inc., from January 2009 to February 2011, as Chief Medical Officer of Kalypsys, Inc., a biopharmaceutical company, from 2006 to 2008, and as Senior Vice President and Chief Medical Officer of Zephyr Sciences, Inc., a biopharmaceutical company, during 2006. Dr. Grint also previously served in similar executive level positions at Pfizer Inc., IDEC Pharmaceuticals Corporation, and Schering-Plough Corporation. Dr. Grint has served on the board of directors of Synedgen, a privately-held bio-pharmaceutical company, since December 2014. Dr. Grint also served on the board of directors of Illumina Inc. from April 2005 to

May 2013. Dr. Grint received a B.S. in Medical Science from St. Mary s Hospital in London and his medical degree from St. Bartholomew s Hospital Medical College at the University of London. Dr. Grint is a Fellow of the Royal College of Pathologists, a member of numerous professional and medical societies, and the

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author or co-author of over 50 scientific publications. The Nominating and Corporate Governance Committee and the board of directors believe that Dr. Grint s significant experience in leading biotechnology and pharmaceutical companies, as well his significant experience in drug development and in the biotechnology industry, qualifies him to serve on our board of directors.

Director Independence

Our business and affairs are organized under the direction of our board of directors, which currently consists of seven members. The primary responsibilities of our board of directors are to provide oversight, strategic guidance, counseling and direction to our management. Our board of directors meets on a regular basis and additionally as needed.

As required under the NYSE MKT listing standards, a majority of the members of a listed company s board of directors must qualify as independent, as affirmatively determined by the board of directors. Our board of directors has affirmatively determined that all of our directors are independent directors within the meaning of the applicable NYSE MKT listing standards, other than Mr. Salka and Ms. Johnson. In making this determination, our board of directors found that none of these directors had a material or other disqualifying relationship with us. Our board of directors concluded that Mr. Salka and Ms. Johnson are not independent directors within the meaning of the applicable NYSE MKT listing standards rules given their roles as Chief Executive Officer and Interim Chief Operating Officer, respectively.

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CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Related-Person Transactions Policy and Procedures

We have adopted a written related-person transactions policy that sets forth our policies and procedures regarding the identification, review, consideration and oversight of related-person transactions. For purposes of our policy only, a related-person transaction is a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we and any related person are participants involving an amount that exceeds $120,000 (or such lower threshold as may be applicable to us from time to time pursuant to the rules and regulations of the SEC or the NYSE MKT).

Transactions involving compensation for services provided to us by an employee, consultant or director are not considered related-person transactions under this policy. A related person is any executive officer, director or a holder of more than 5% of our common stock, including any of their immediate family members and any entity owned or controlled by such persons.

Under the policy, where a transaction has been identified as a related-person transaction, management must present information regarding the proposed related-person transaction to our Audit Committee (or, where review by our Audit Committee would be inappropriate, to another independent body of our board of directors) for approval. The presentation must include a description of, among other things, the material facts, the direct and indirect interests of the related persons, the benefits of the transaction to us and whether any alternative transactions are available. To identify related-person transactions in advance, we rely on information supplied by our executive officers, directors and certain significant stockholders. In considering related-person transactions, our Audit Committee or other independent body of our board of directors takes into account the relevant available facts and circumstances including, but not limited to:

the risks, costs and benefits to us;
the impact on a director s independence in the event the related person is a director, immediate family member of a director or an entity with which a director is affiliated;
the terms of the transaction;
the availability of other sources for comparable services or products; and
the terms available to or from, as the case may be, unrelated third parties.

In the event a director has an interest in the proposed transaction, the director must recuse himself or herself from the deliberations and approval.

Certain Related-Person Transactions

The following includes a summary of transactions since January 1, 2013 to which we have been a party, in which the amount involved in the transaction exceeded the lesser of $120,000 or one percent of the average of our total assets at year-end for the last two completed fiscal years, and in which any of our directors, executive officers or, to our knowledge, beneficial owners of more than 5% of our capital stock or any member of the immediate family of any of the foregoing persons had or will have a direct or indirect material interest, other than equity and other compensation, termination, change in control and other arrangements, which are described in our filings with the SEC.

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Sale of Convertible Notes

In 2013, we sold convertible notes to Pendinas Limited in varying principal amounts for an aggregate total of $2,000,000. Additionally, we issued warrants to purchase an aggregate of up to approximately 140,000 shares of common stock at an exercise price of $7.00 per share. All such convertible notes have been converted as a result of the completion of our private placement of convertible preferred stock, as of July 15, 2013. The following table summarizes sales of such convertible notes to Pendinas Limited, which was a holder of more than 5% of our common stock as of the dates of each such transaction:

Date	Principal Amount
February 4, 2013	$ 500,000.00
March 12, 2013	$ 500,000.00
April 12, 2013	$ 500,000.00
May 13, 2013	$ 500,000.00

June 2013 Private Placement

In June 2013, we sold an aggregate of 9,357,935 shares of our Series B Convertible Preferred Stock and warrants to purchase an aggregate of 467,896 shares of our common stock. Pendinas Limited, a holder of more than 5% of our common stock as of the date of such transaction, converted all of its outstanding convertible notes into 3,225,061 shares of Series B Convertible Preferred Stock and a warrant to purchase 161,253 shares of our common stock in the transaction.

In connection with our June 2013 private placement of convertible preferred stock, we paid a placement fee to Griffin Securities, Inc. in the amount of $270,000 in cash and warrants to purchase 85,714 shares of common stock at an exercise price of $7.00 per share, and to Phillip Capital Ltd in the amount of $60,000 in cash and warrants to purchase 14,285 shares of common stock at an exercise price of $7.00 per share.

In addition, in connection with the June 2013 private placement, NRM VII Holdings I, LLC purchased 2,142,857 shares of our Series B Convertible Preferred Stock and warrants to purchase an additional 107,142 shares of our common stock. NRM VII Holdings I, LLC is controlled by Randal J. Kirk, who at the time of the transaction was a holder of more than 5% of the shares of our common stock. Phillip Asset Management Ltd also purchased 714,285 shares of our Series B Convertible Preferred Stock and warrants to purchase an additional 35,714 shares of our common stock. Phillip Asset Management Ltd holds its shares in its capacity as trustee for Bioscience Managers Pty Ltd. Jeremy Curnock Cook, the Chairman of our board of directors, is a Managing Director and holds an ownership interest in Bioscience Managers Pty Ltd.

The shares issued in the June 2013 private placement are entitled to certain piggyback registration rights, as described in Description of Capital Stock Registration Rights in this prospectus.

December 2013 Private Placement

In December 2013, in connection with a private placement of our common stock, we sold an aggregate of 6,000 shares of our common stock to Baxter F. Phillips III, who at the time was our Vice President, Corporate Strategy and Business Development, for $12.50 per share, which was the same price paid by the other investors participating in the private placement.

In addition, in connection with the December 2013 private placement, NRM VII Holdings I, LLC and Phillip Asset Management Ltd purchased 400,000 shares and 120,000 shares, respectively, of our common stock at a price per share of $12.50, which was the same price paid by the other investors participating in the offering.

The shares of common stock purchased in the December 2013 private placement are entitled to certain registration rights, as described in Description of Capital Stock Registration Rights in this prospectus.

March 2015 Private Placements

In March 2015, in connection with a private placement of our common stock, we sold an aggregate of 68,455 shares at a price of $8.25 per share, and warrants exercisable for 17,113 shares of common stock at a price of $10.75 per share, to One Fund Management Limited as Trustee for Asia Pacific Healthcare Fund II (One Funds), which is also known as Phillip Asset Management Limited as Trustee for Asia Pacific

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Healthcare Fund II, or Phillip Asset Management. Jeremy Curnock Cook, our then-interim Chief Executive Officer and the current Chairman of our board of directors, is a Managing Director and holds an ownership interest in Bioscience Managers Pty Ltd. Phillip Asset Management Limited is 100% owned by Phillip Capital Holdings Ltd., an Australian stockbroker. Phillip Asset Management holds all shares in its capacity as trustee for Bioscience Managers Pty Ltd.

In addition, in connection with the March 2015 private placement, we sold an aggregate of 278,788 shares and warrants exercisable for 69,697 shares of common stock, at the prices set forth above, to Intrexon Corporation. Randal J. Kirk, directly and through certain affiliates, has voting and dispositive power over a majority of the outstanding capital stock of Intrexon Corporation. At the time of the transaction, Randal J. Kirk was a holder of more than 5% of the shares of our common stock. In connection with the March 2015 private placement, we entered into a registration rights agreement with Intrexon and certain other purchasers in the private placement, pursuant to which we registered for resale on Form S-1 (File No. 333-203454) 824,848 shares of common stock held or issuable upon exercise of warrants by Intrexon. We also granted Intrexon certain piggyback registration rights, as described in Description of Capital Stock Registration Rights in this prospectus.

Exclusive Channel Collaboration

Pursuant to that certain Exclusive Channel Collaboration Agreement, dated as of March 29, 2013, with Intrexon Corporation, which we refer to as the ECC Agreement, we agreed to pay Intrexon Corporation royalties as a percentage in the upper-single digits of the net product sales of a product developed under the collaboration, and up to $7.5 million in aggregate milestone payments for each product developed. Intrexon Corporation owned more than 5% of our common stock at the time of the transaction. On April 13, 2016, we provided written notice to Intrexon Corporation of our election to voluntarily terminate the ECC Agreement. The effective date of termination was July 12, 2016.

Common Stock Issuance Agreement

On April 8, 2016, we entered into a Common Stock Issuance Agreement, or the CSIA, with certain former holders of our Series B convertible preferred stock, including Pendinas Limited and One Funds. Pursuant to the CSIA, we issued shares of our common stock to such holders, and amended certain warrants to purchase common stock issued to such holders in the private placement of Series B convertible preferred stock in June 2013 and/or July 2013, in order to reduce the exercise price of such warrants from $7.00 per share to $4.05 per share and extend the expiration date thereof from June 26, 2018 to March 31, 2021. As consideration for the transactions described above, such holders waived their right to receive approximately $2.2 million in aggregate cash payments to which they were entitled upon the conversion of all outstanding shares of Series B redeemable convertible preferred stock into shares of common stock on April 8, 2016, in respect of accrued dividends on their former shares of Series B convertible preferred stock. Such holders also waived their registration rights with respect to certain future registration statements that may be filed, and certain future public offerings that may be conducted, by us.

The table below summarizes the shares issued to Pendinas Limited and One Funds and the accrued dividends waived by such parties:

Related Person	Shares Issued	Accrued Dividends Waived

Pendinas Limited	584,556	$ 1,504,433
One Funds	171,298	$ 440,859

Pursuant to the terms of the CSIA and in connection with the registered direct public offering that we completed in June 2016, on June 21, 2016 we issued 513,837 and 150,576 shares of common stock to Pendinas Limited and One Funds, respectively, for no additional consideration.

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We may be required to issue additional shares to Pendinas and One Funds pursuant to the CSIA in connection with the closing of this offering, as described elsewhere in this prospectus and the documents incorporated herein by reference.

Settlement Agreement

On November 12, 2016, we entered into a settlement agreement with NRM. See Business Legal Proceedings for more information.

Indemnification Agreements

We have entered, and intend to continue to enter, into separate indemnification agreements with each of our directors and executive officers, as described in our filings with the SEC.

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PRINCIPAL STOCKHOLDERS

The following table sets forth information regarding beneficial ownership of our capital stock by:

each person, or group of affiliated persons, known by us to beneficially own more than 5% of our common stock;
each of our directors;
each of our named executive officers; and
all of our current executive officers and directors as a group.

The percentage ownership information before the offering is based on 11,120,394 shares of common stock outstanding as of September 30, 2016. The percentage ownership information after the offering assumes the sale of 5,335,000 shares in this offering and assumes no exercise of any warrants issued in this offering, and does not reflect any shares of common stock we may issue in connection with the closing of this offering pursuant to the CSIA.

The following table is based upon information supplied by officers, directors and principal stockholders and/or a review of Schedules 13D and 13G, if any, and other documents filed with the SEC. We have determined beneficial ownership in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities. In addition, the rules include shares of our common stock issuable pursuant to the exercise of stock options or warrants that are either immediately exercisable or exercisable on or before November 29, 2016, which is 60 days after September 30, 2016. These shares are deemed to be outstanding and beneficially owned by the person holding those options or warrants for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise indicated, the persons or entities identified in this table have sole voting and investment power with respect to all shares shown as beneficially owned by them, subject to applicable community property laws.

Except as otherwise noted below, the address for each person or entity listed in the table is c/o AmpliPhi Biosciences Corporation, 3579 Valley Centre Drive, Suite 100, San Diego, California 92130.

Name and Address of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned Before Offering	Percentage of Shares Beneficially Owned After Offering
Greater than 5% Stockholders			
Pendinas Limited[1] Ballacarrick, Pooilvaaish Road Isle of Man, IM9 4PJ	2,144,742	18.7 %	12.8 %
Randal J. Kirk[2] c/o Third Security, LLC 1881 Grove Avenue Radford, Virginia 24141	1,764,199	15.6 %	10.6 %
Hudson Bay Master Fund Ltd.[3] 777 Third Ave., 30th Floor New York, NY 10017	1,071,406	9.3 %	6.4 %
Empery Asset Management LP[4] 1 Rockefeller Plaza, Suite 1205 New York, NY 10020	1,070,389	9.3 %	6.4 %

Sabby Healthcare Master Fund, Ltd.[5]					
10 Mountainview Road	1,063,830	9.3	%	6.3	%
Upper Saddle River, NJ 07458					
Phillip Asset Management Limited[6]					
Level 12, 15 William Street,	819,777	7.3	%	5.0%	
Melbourne Vic Australia					

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Name and Address of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned Before Offering	After Offering
Directors and Named Executive Officers			
M. Scott Salka[7]	54,164	*	*
Jeremy Curnock Cook[8]	847,370	7.5 %	5.1 %
Louis Drapeau[9]	14,431	*	*
Michael S. Perry, Ph.D.[10]	8,931	*	*
Vijay B. Samant[11]	4,050	*	*
Paul C. Grint, M.D.[12]	4,050	*	*
Wendy Johnson[13]	52,996	*	*
David E. Bosher			
All current executive officers and directors as a group (8 persons)[14]	985,992	8.7 %	5.9 %

* Represents beneficial ownership of less than 1%.

(1) Based in part upon a Form 4 filed with the SEC on February 24, 2014 filed by Gwynn Williams, who may be deemed to control Pendinas Limited. After giving effect to the 1-for-50 reverse split of our common stock effected in August 2015 and the conversion of all outstanding shares of Series B redeemable convertible preferred stock into shares of common stock on April 8, 2016, or the Series B Conversion, consists of 1,808,698 shares of common stock and 336,044 shares of common stock issuable upon exercise of warrants.

(2) Based solely upon a Schedule 13D filed with the SEC on March 16, 2015. According to the Schedule 13D and giving effect to the 1-for-50 reverse split of our common stock effected in August 2015 and the Series B Conversion, consists of (a) 828,571 shares of common stock held by NRM VII Holdings I, LLC, which we refer to as NRM VII Holdings, (b) 107,143 shares of common stock issuable upon exercise of warrants held by NRM VII Holdings, (c) 758,788 shares of common stock held by Intrexon Corporation, and (d) 69,697 shares of common stock issuable upon exercise of warrants held Intrexon Corporation. Third Security, LLC is the Manager of Third Security Capital Partners VII, LLC, which is the Manager of NRM VII Holdings. Third Security, LLC has sole voting and investment power over the shares beneficially owned by NRM VII Holdings listed in the foregoing clauses (a) and (b), and consequently Third Security beneficially owns approximately 11.2% of our common stock. Randal J. Kirk is the Manager of Third Security, LLC. Shares held by this entity may be deemed to be indirectly beneficially owned (as defined under Rule 13d-3 promulgated under the Exchange Act) by Mr. Kirk. Mr. Kirk disclaims beneficial ownership of such shares, except to the extent of any pecuniary interest therein. Randal J. Kirk, directly and through certain affiliates, has voting and dispositive power over a majority of the outstanding capital stock of Intrexon Corporation. Mr. Kirk may therefore be deemed to have voting and dispositive power over the shares of the issuer owned by Intrexon Corporation. Shares held by Intrexon Corporation may be deemed to be indirectly beneficially owned (as defined under Rule 13d-3 promulgated under the Exchange Act) by Mr. Kirk. Mr. Kirk disclaims beneficial ownership of such shares, except to the extent of any pecuniary interest therein.

(3) Consists of 709,220 shares of common stock and 362,186 shares of common stock issuable upon exercise of warrants. Hudson Bay Capital Management LP, the investment manager of Hudson Bay Master Fund Ltd., has voting and investment power over such securities. Sander Gerber is the managing member of Hudson Bay Capital GP LLC, which is the general partner of Hudson Bay Capital Management LP. Each of the foregoing persons and entities disclaim beneficial ownership of the securities held by them except to the extent of his or its pecuniary interest therein.

(4) Consists of (a) 269,236 shares of common stock held by Empery Asset Master Ltd., which we refer to as EAM, and 136,629 shares of common stock issuable upon exercise of warrants held by EAM, (b) 181,862 shares of

common stock held by Empery Tax Efficient, LP, which we refer to as ETE, and 93,144 shares of common stock issuable upon exercise of warrants held by ETE and (c) 258,122 shares of common stock held by Empery Tax Efficient II, LP, which we refer to as ETE II, and 131,396 shares of common stock issuable upon exercise of warrants held by ETE II. Empery Asset Management LP is the authorized agent of EAM, ETE and ETE II, and has discretionary authority to vote and dispose of the shares held by EAM, ETE and ETE II, respectively, and may be deemed to be the beneficial owner of

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the securities held by each such entity. Martin Hoe and Ryan Lane, in their capacity as investment managers of Empery Asset Management LP, may also be deemed to have investment discretion and voting power over the shares held by EAM, ETE and ETE II. Each of the foregoing persons and entities disclaim beneficial ownership of the securities held by them except to the extent of his or its pecuniary interest therein.

(5) Consists of (a) 354,610 shares of common stock held by Sabby Healthcare Master Fund, Ltd., which we refer to as Sabby HMF, and 177,305 shares of common stock issuable upon exercise of warrants held by Sabby HMF and (b) 354,610 shares of common stock held by Sabby Volatility Warrant Master Fund, Ltd., which we refer to as Sabby VWMF, and 177,305 shares of common stock issuable upon exercise of warrants held by Sabby VWMF. Sabby Management, LLC serves as the investment manager of Sabby HMF and Sabby VWMF. Hal Mintz is the manager of Sabby Management, LLC and has voting and investment control of the securities held by Sabby HMF and Sabby VWMF. Each of the foregoing persons and entities disclaim beneficial ownership of the securities held by them except to the extent of his or its pecuniary interest therein.

(6) Consists of (a) 718,479 shares of common stock held by One Fund Management Limited as Trustee for Asia Pacific Healthcare Fund II, which is also known as Phillip Asset Management Limited as Trustee for Asia Pacific Healthcare Fund II, and which we refer to as Phillip Asset Management, and (b) an aggregate of 101,298 shares of common stock issuable upon exercise of warrants held by Phillip Asset Management. Phillip Asset Management holds all securities in its capacity as trustee for Bioscience Managers Pty Ltd. Jeremy Curnock Cook, the Chairman of our Board of Directors, is a Managing Director and holds an ownership interest in Bioscience Managers Pty Ltd.

(7) Includes 49,964 shares of common stock that Mr. Salka has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(8) Includes the shares reference in Footnote 6 above and 24,293 shares of common stock that Mr. Curnock Cook has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(9) Includes 4,431 shares of common stock that Mr. Drapeau has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(10) Includes 6,631 shares of common stock that Dr. Perry has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(11) Includes 4,050 shares of common stock that Mr. Samant has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(12) Includes 4,050 shares of common stock that Dr. Grint has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(13) Includes 52,996 shares of common stock that Ms. Johnson has the right to acquire from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

(14) Consists of (a) 739,279 shares of common stock, (b) 101,298 shares of common stock issuable upon exercise of warrants and (c) 145,415 shares of common stock that may be acquired from us within 60 days following September 30, 2016, pursuant to the exercise of stock options.

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DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock, certain provisions of our articles of incorporation and bylaws, and certain provisions of Washington law are summaries. The following description is not complete and is subject to and qualified in its entirety by our articles of incorporation and bylaws, which are filed as exhibits to the registration statement of which this prospectus is a part, and by the relevant provisions of the Washington Business Corporation Act.

Our articles of incorporation authorize us to issue up to 670,000,000 shares of common stock, par value $0.01 per share, and 10,000,000 shares of preferred stock, par value $0.01 per share.

As of September 30, 2016, we had 156 holders of record of our common stock. The actual number of stockholders is greater than the number of record holders, and includes stockholders who are beneficial owners, whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Common Stock

Voting

Our common stock is entitled to one vote for each share held on all matters submitted to a vote of the stockholders, including the election of directors, and does not have cumulative voting rights. Accordingly, the holders of a majority of the shares of our common stock entitled to vote in any election of directors can elect all of the directors standing for election.

Dividends

Subject to preferences that may be applicable to any then-outstanding preferred stock, the holders of common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding-up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock.

Rights and Preferences

Holders of our common stock have no preemptive, conversion or subscription rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of our preferred stock that are outstanding or that we may designate and issue in the future.

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of the common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in our control that may otherwise benefit holders of our common stock and may adversely affect the market price of the common stock and the voting and other rights of the holders of common stock.

There currently are no provisions under our amended and restated articles of incorporation or under any other contractual obligations whereby we are authorized or required to issue or sell shares of preferred stock and we have no present plans to issue any shares of preferred stock.

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Registration Rights

Certain holders of shares of our common stock and of warrants to purchase shares of our common stock, or their transferees, are entitled to certain registration rights under the Securities Act as set forth below.

Demand registration rights. Pursuant to that certain Subscription Agreement, dated June 26, 2013, which we refer to as the June 2013 Subscription Agreement, from the date that is the earlier of (a) June 26, 2018 and (b) 180 days after the effective date of the registration statement for our initial public offering, the holders of at least 50% of our common stock issued upon conversion of shares of our Series B redeemable convertible preferred stock and/or issued or issuable upon the exercise of warrants issued pursuant to the June 2013 Subscription Agreement are entitled to request to have such shares registered by us on a Form S-1 registration statement. As of September 30, 2016, the holders of an aggregate of 2,114,534 shares of common stock and holders of warrants to purchase an aggregate of 467,035 shares of our common stock are entitled to such rights.

Form S-3 registration rights. At any time we are eligible to use a Form S-3 registration statement, holders of at least 30% of our common stock issued upon conversion of shares of our Series B redeemable convertible preferred stock and/or issued or issuable upon the exercise of warrants issued pursuant to the June 2013 Subscription Agreement are entitled to request to have such shares registered by us on a Form S-3 registration statement. As of September 30, 2016, the holders of an aggregate of 2,114,534 shares of common stock and holders of warrants to purchase an aggregate of 467,035 shares of our common stock are entitled to such rights.

Piggyback registration rights. If we propose to file a registration statement to register any of our securities under the Securities Act either for our own account or for the account of other securityholders, the holders of warrants to purchase an aggregate of 27,102 shares of our common stock are entitled to notice of the registration and will be entitled to include the shares of common stock issued or issuable upon exercise of such warrants in any such registration statement. These piggyback registration rights are subject to specified conditions and limitations, including, in the case of an underwritten offering, the right of the underwriters to limit the number of shares included in any such registration under specified circumstances. The warrants described above in this paragraph have an exercise price of $23.00 per share and will expire in December 2016.

In addition, so long as we are required to maintain an effective registration statement covering shares of common stock issued pursuant to that certain Subscription Agreement, dated December 16, 2013, which we refer to as the December 2013 Subscription Agreement, or shares of common stock issued pursuant to that certain Subscription Agreement, dated March 10, 2015, which we refer to as the March 2015 Subscription Agreement, then, if there is not an effective registration statement covering such shares, the holders of such shares will be eligible for the rights contained in the immediately preceding paragraph. With respect to each holder of the foregoing registration rights, we are required to keep a registration statement covering such shares effective until all applicable shares of common stock held by such holder may be sold under Rule 144 of the Securities Act. As of September 30, 2016, the holders of an aggregate of 867,241 shares of common stock were entitled to such rights.

If we propose to file a registration statement under the Securities Act with respect to an underwritten offering for our own account, the holders of the securities issued pursuant to the June 2013 Subscription Agreement, as well as the shares held by Intrexon Corporation, will be entitled to advance notice of the proposed filing of such registration statement and will be entitled to include the securities described above or, in the case of Intrexon Corporation, the shares of common stock held by Intrexon Corporation, in any such registration statement. These piggyback registration rights are subject to specified conditions and limitations, including, in the case of an underwritten offering, the right of the underwriters to limit the number of shares included in any such registration under specified

circumstances.

From the date that is the earlier of (a) December 31, 2016 or (b) the closing of our first underwritten public offering, the holders of warrants to purchase an aggregate of 170,000 shares of our common stock, which warrants were issued by us pursuant to our acquisition of certain assets of Novolytics Limited in January 2016, will be entitled to piggyback registration rights provided such securities are not then covered by an effective registration statement.

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Resale registration statements. Pursuant to that certain Registration Rights Agreement, dated December 16, 2013, by and between us and the purchasers of shares of common stock and warrants to purchase common stock named therein, and that certain Registration Rights Agreement, dated March 10, 2015, by and between us and the purchasers of shares of common stock and warrants to purchase common stock named therein, we agreed to file registration statements on Form S-1 covering the resale of the shares of common stock purchased under the December 2013 Subscription Agreement or March 2015 Subscription Agreement, as applicable, which became effective on December 29, 2014 and May 14, 2015, respectively. With respect to each holder of the foregoing registration rights, we are required to keep such registration statements effective until all applicable shares of common stock may be sold under Rule 144 of the Securities Act.

Expenses of registration. We will pay all expenses relating to any piggyback or Form S-1 or S-3 registration, other than underwriting discounts and commissions, subject to specified conditions and limitations.

Anti-Takeover Effects of Provisions of Our Articles of Incorporation, Our Bylaws and Washington Law

Provisions in our articles of incorporation, our bylaws and under Washington law may delay or prevent an acquisition of us or a change in our management, including transactions in which stockholders might otherwise receive a premium for their shares or transactions that our stockholders might otherwise deem to be in their best interests. These provisions include a classified board of directors and a requirement for the vote of stockholders holding at least two-thirds of all shares of our issued and outstanding capital stock to approve certain changes to our articles of incorporation or certain business combinations. These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management. Additionally, because we are incorporated in Washington, we are governed by the provisions of Chapter 23B.19 of the Washington Business Corporation Act, which, among other things, prohibits a target corporation, with certain exceptions, from engaging in certain significant business transactions for a period of five years after the share acquisition by an acquiring person , unless (a) the significant business transaction is approved by a majority of the members of the target corporation s board of directors prior to the time of acquisition or (b) the significant business transaction was approved by both the majority of the members of the target corporation s board of directors and approved at a stockholder meeting by at least two-thirds of the outstanding voting shares (excluding the acquiring person s shares or shares over which the acquiring person has voting control) at or subsequent to the acquiring person s share acquisition. An acquiring person is defined as a person or group of persons which beneficially owns 10% or more of the voting securities of the target corporation. Such prohibited transactions may include, among other things:

any merger or consolidation with, disposition of assets to, or issuance or redemption of stock to or from, the acquiring person;
any termination of 5% or more of the employees of the target corporation as a result of the acquiring person s acquisition of 10% or more of the shares; or
allowing the acquiring person to receive any disproportionate benefit as a stockholder.

After the five-year period, a significant business transaction may take place as long as it complies with certain fair price provisions of the statute or is approved by a majority of the votes entitled to be counted within each voting group entitled to vote separately on the transaction (excluding the acquiring person s shares or shares over which the acquiring person has voting control) at an annual or special meeting of stockholders.

NYSE MKT Listing

Our common stock is listed on the NYSE MKT under the symbol APHB.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare. The transfer agent and registrar s address is 250 Royall Street, Canton, MA 02021.

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DESCRIPTION OF SECURITIES WE ARE OFFERING

We are offering (i) 5,335,000 shares of our common stock and (ii) warrants to purchase up to 5,335,000 shares of our common stock. Each share of common stock is being sold together with a warrant to purchase one share of common stock. The shares of common stock and warrants will be issued separately. We are also registering the shares of common stock issuable from time to time upon exercise of the warrants offered hereby.

Common Stock

The material terms and provisions of our common stock and each other class of our securities which qualifies or limits our common stock are described under the caption Description of Capital Stock in this prospectus.

Warrants

The following summary of certain terms and provisions of warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the warrant, the form of which is filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of warrant for a complete description of the terms and conditions of the warrants.

Duration and Exercise Price. Each warrant offered hereby will have an initial exercise price per share equal to $0.75. The warrants will be immediately exercisable and will expire on the fifth anniversary of the original issuance date. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The warrants will be issued separately from the common stock, and may be transferred separately immediately thereafter. A warrant to purchase one share of our common stock will be issued for every one share purchased in this offering. The warrants have an exercise price protection feature as described in the form of warrant attached as an exhibit to the registration statement of which this prospectus forms a part.

Exercisability. The warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of the warrant to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder s warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the warrants. No fractional shares of common stock will be issued in connection with the exercise of a warrant. In lieu of fractional shares, we will either pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price or round up to the next whole share.

Cashless Exercise. If, at the time a holder exercises its warrant, a registration statement registering the issuance of the shares of common stock underlying the warrants under the Securities Act is not then effective or available, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the warrant.

Fundamental Transactions. In the event of a fundamental transaction, as described