**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**
**Washington, DC 20549**

**Form 10-K**

[X] **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.**
**For the fiscal year ended December 31, 2014**

[_] **TRANSITION REPORTS PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.**
**For the transition period from to**

**Commission File Number: 333-178082**

**XENETIC BIOSCIENCES, INC.**
**(Exact name of registrant as specified in its charter)**

| **Nevada** | **45-2952962** |
|---|---|
| **(State or other jurisdiction of incorporation or organization)** | **(IRS Employer Identification No.)** |

**99 Hayden Ave, Suite 230**
**Lexington, Massachusetts 02421**
**(Address of principal executive offices and zip code)**
**781-778-7720**
**(Registrant's telephone number, including area code)**

| **Title of Each Class** | **Name of Each Exchange on Which Registered** |
|---|---|
| **None** | **None** |

**Securities registered pursuant to Section 12(b) of the Act:**
**None**
**Securities registered pursuant to Section 12(g) of the Act:**
**None**

Indicate by check mark if the registrant is a well known seasoned issuer, as defined in Rule 405 of the Securities Act: Yes [_] No [X]
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act: Yes [_] No [X]
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days): Yes [X] No [_]
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files): Yes [X] No [_]
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K: Yes [X] No [_]
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

| | | | |
|---|---|---|---|
| Large accelerated filer | [_] | Accelerated filer | [_] |
| Non-accelerated filer | [_] | Smaller reporting company | [X] |

(Do not check if a smaller reporting company)
Indicate by check mark whether the registrant is a shell company (as defined in Exchange Act Rule 12b-2): Yes [_] No [X]

The approximate aggregate market value of voting common stock held by non-affiliates of the registrant, based upon the last sale price of the registrant's common stock on the last business day of the registrant's most recently completed second fiscal quarter June 30, 2014 (based upon the shares of common stock at the closing sale price of the registrant's common stock listed as reported on the OTC Bulletin Board), was approximately $35,361,000. Note, however, that this was prior to the Acquisition described herein.

As of April 10, 2015 the number of outstanding shares of the registrant's common stock was 149,985,476.

**DOCUMENTS INCORPORATED BY REFERENCE**

The registrant intends to file a proxy statement pursuant to Regulation 14A or a Form 10-K/A, not later than 120 days after the close of the fiscal year ended December 31, 2014. Portions of such proxy statement or Form 10-K/A are incorporated by reference into Part III of this Annual Report on Form 10-K.

**XENETIC BIOSCIENCES, INC.**
**2014 ANNUAL REPORT ON FORM 10-K**

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**CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS**

This report contains both historical and forward-looking statements. The forward-looking statements in this annual report are not based on historical facts, but rather reflect the current expectations of our management concerning future results and events. These forward-looking statements include, but are not limited to, statements concerning our plans to continue the development of our proposed drug candidates; our expectations regarding the nature, timing and extent of clinical trials and proposed clinical trials; our expectations regarding the timing for proposed submissions of regulatory filings, including but not limited to any Investigational New Drug ("IND") filing or any new drug application ("NDA"); the nature, timing and extent of collaboration arrangements; the expected results pursuant to collaboration arrangements including the receipts of future payments that may arise pursuant to collaboration arrangements; the outcome of our plans to obtain regulatory approval of our drug candidates; the outcome of our plans for the commercialization of our drug candidates; our plans to address certain markets, engage third party manufacturers, and evaluate additional drug candidates for subsequent commercial development, and the likelihood and extent of competition to our drug candidates.

In some cases, these statements may be identified by terminology such as "may", "will", "should", "expect", "plan", "anticipate", "believe", "estimate", "predict", "potential", or "continue", or the negative of such terms and other comparable terminology. Although we believe that the expectations reflected in the forward-looking statements contained herein are reasonable, we cannot guarantee future results, the levels of activity, performance or achievements. These statements involve known and unknown risks and uncertainties that may cause our or our industry's results, levels of activity, performance or achievements to be materially different from those expressed or implied by forward-looking statements.

The Management's Discussion and Analysis of Financial Condition and Results of Operations (the "MD&A") should be read together with our financial statements and related notes included elsewhere in this annual report. This annual report, including the MD&A, contains trend analysis and other forward-looking statements. Any statements in this annual report that are not statements of historical facts are forward-looking statements. These forward-looking statements made herein are based on our current expectations, involve a number of risks and uncertainties and should not be considered as guarantees of future performance.

The single most pressing factor that could cause actual results to differ materially and adversely is our need to raise additional working capital for the purpose of further developing our various drug candidates.

Other factors that could cause actual results to differ materially include without limitation:

- our ability to finance our business;
- our ability to achieve milestone and other payments associated with our co-development collaborations and strategic arrangements;
- the impact of new technologies on our drug candidates and our competition;
- changes in laws or regulations of governmental agencies;
- interruptions or cancellation of existing contracts;
- impact of competitive products and pricing;
- product demand and market acceptance and risks;
- the presence of competitors with greater financial resources;
- product development and commercialization risks;
- continued availability of supplies or materials used in manufacturing at the current prices;
- the ability of management to execute plans and motivate personnel in the execution of those plans;
- adverse publicity related to our products or the Company (as defined below) itself;
- adverse claims relating to our Intellectual Property ("IP");
- the adoption of new, or changes in, accounting principles;
- the costs inherent with complying with new statutes and regulations applicable to public reporting companies, such as the Sarbanes-Oxley Act of 2002; and
- other new lines of business that the Company may enter in the future

These factors are not necessarily all of the important factors that could cause actual results to differ materially from those expressed in the forward-looking statements in this annual report. Other unknown or unpredictable factors also could have material adverse effects on our future results. The forward-looking statements in this annual report are made only as of the date of this annual report, and we do not have any obligation to publicly update any forward-looking statements to reflect subsequent events or circumstances. Please also refer to Item 1A - Risk Factors in this Annual Report on Form 10-K.

## PART I

### ITEM 1 – BUSINESS

#### Trademarks

Xenetic Biosciences, Inc.'s brand and product names, including but not limited to PolyXen®, OncoHist™ and ImuXen® contained in this document are trademarks, registered trademarks or service marks of Xenetic Biosciences, Inc. and or its subsidiaries in the United States of America ("USA" or "US") and certain other countries. This document contains references to trademarks and service marks of other companies that are the property of their respective owners.

#### 2014 Developments

***Acquisition***

On January 23, 2014, the Company consummated an acquisition pursuant to a written plan of reorganization, in which we merged with Xenetic Biosciences (UK) Limited (formerly Xenetic Biosciences plc) ("Xenetic UK"), a company incorporated in England and Wales under the Companies Act of 1985, such that Xenetic UK became a wholly owned subsidiary of the Company (the "Acquisition"). Upon completion of the Acquisition, we acquired all issued and outstanding shares of capital stock of Xenetic UK. As a result, 132,545,504 shares of our common stock were newly issued and, immediately following the Acquisition, there were 136,045,504 shares of common stock issued and outstanding. At that time, because former Xenetic UK shareholders owned approximately 97% of the combined company on a fully diluted basis and all members of the combined company's executive management were from Xenetic UK, Xenetic UK was deemed to be the acquiring company for accounting purposes and the transaction was accounted for as a reverse acquisition in accordance with accounting principles generally accepted in the United States ("US GAAP").

Prior to the Acquisition, the Company changed its name from General Sales and Leasing, Inc. to Xenetic Biosciences, Inc. As used in these consolidated financial statements, unless otherwise indicated, all references herein to "Xenetic", the "Company", "we" or "us" refer to Xenetic Biosciences, Inc. and its wholly owned subsidiaries.

***Stock Purchase Agreement***

On January 29, 2014 the Company entered into a stock purchase agreement (the "Purchase Agreement") with Baxter Healthcare SA ("Baxter SA"), pursuant to which the Company sold to Baxter SA 10,695,187 shares of the Company's common stock, par value $0.01 per share, (the "Shares") for $10 million (the "Purchase Price") at a price of $0.935 per share yielding a market cap of approximately $140 million.

The Shares were sold in a private placement and were not registered under the Securities Act, or the securities laws of any state, and were offered and sold in reliance on the exemption from registration afforded by Section 4(a)(2) and Regulation D (Rule 506) under the Securities Act and corresponding provisions of state securities laws, which exempt transactions by an issuer not involving any public offering. Baxter SA is an "Accredited Investor" as such term is defined in Regulation D promulgated under the Securities Act. For a further discussion of the Purchase Agreement please refer to "Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities – Recent Sales of Unregistered Securities" in this Annual Report filed on Form 10-K.

**Overview of Business**

The Company, carrying on business in a single operating segment, is a clinical stage biopharmaceutical company that is focused on the research and development of certain pharmaceutical products for use in humans that incorporate the use of its patented and proprietary platform technologies that we believe will enable the creation of novel and next generation drug therapies primarily for orphan indications.

We hold over 147 US and international patents issued, more than 90 patents pending and other proprietary rights to three distinct platform technologies that are designed to treat a variety of indications with potential use advantages over competing products.

The Company's three distinct technologies are summarized below:

| | |
|---|---|
| PolyXen® | An enabling technology that utilizes Polysialic Acid ("PSA"), a biopolymer, consisting of a chain of sialic acids which is a natural constituent of the human body. PSA is designed to extend the half-life in circulation in the human body for a variety of existing drug molecules and, thereby, to create potentially superior next generation drug candidates. |
| OncoHist™ | A novel therapeutic platform that utilizes the properties of the human histone H1.3 ("H1.3") for the development of drug candidates for the treatment of a broad range of cancer indications. OncoHist™, unlike many competing oncology therapies, is based on a molecule occurring naturally in the human body, in the cell nucleus, and is therefore expected to be less toxic and immunogenetic than other oncology therapies. |
| ImuXen® | A novel liposomal co-entrapment encapsulation technology designed to create new vaccines and improve the use and efficacy of certain existing vaccines for use in the human body. The technology is based on the co-entrapment of the nominated antigen(s) in a liposomal vesicle, a design that is intended to maximize both cell and immune system mediated responses. |

All of the Company's drug candidates are in the development stage and none has yet received regulatory approval for marketing in the U.S. by the U.S. Food and Drug Administration (the "FDA") or by any applicable agencies in other countries.

First formed in 1997 as a spin out from University College London School of Pharmacy, our laboratories were based in London, England, until the end of 2013. In January 2014, the Company completed the relocation of its research base from England to the U.S. The Company made its first move towards the U.S. when, in early 2013, it committed to set up a Drug Development Centre of Excellence in the Boston area, a decision that resulted in the physical relocation of its scientific level of effort to its newly opened laboratory in Lexington, Massachusetts. The next pivotal stage of corporate strategy was also concluded in January 2014 when the Company completed a listing in the US on the OTC markets that resulted in its present operations as a clinical stage biopharmaceutical business. The Company believes that it will be better able to attract and retain qualified scientific researchers and other staff in its new Lexington location due to the Boston area having a wealth of talent in orphan drug development and market launch expertise.

**Our Business Strategy**

The Company intends to advance the clinical development of its drug candidates through a combination of conducting its own in-house research and through the use of the outside services of contract manufacturing and research organizations. The OncoHist™ drug candidate for AML has been granted orphan drug designation by the FDA and European Medicines Agency ("EMA"). The Company expects to seek further orphan drug designations relating to this novel potential cancer therapeutic over the next twelve months, working in concert with the Dana Farber Cancer Institute. The advancement of its drug candidates is dependent, in part, on several important co-development collaborations and strategic arrangements. Together with its collaborative partners, Baxter Healthcare SA and Baxter Healthcare Corporation (together referred to as "Baxter"), a shareholder in the Company, SynBio LLC ("SynBio"), a Russian pharmaceutical company and significant shareholder in the Company, OJSC ("Open Joint Stock Company") Pharmsynthez ("Pharmsynthez"), a Russian pharmaceutical company and related party to SynBio and Serum Institute of India Limited ("Serum Institute"), one of India's largest biotech companies and a shareholder in the Company, the Company is focused on developing its pipeline of next generation bio-therapeutics and novel orphan drugs in oncology based on the Company's PolyXen®, OncoHist™ and ImuXen® technology platforms.

As part of the Company's strategy, it out-licensed the rights to twelve drug candidates for research, development and commercialization within certain defined territories including the Russian Federation and Commonwealth of Independent States ("CIS"), with respect to SynBio and Pharmsynthez, and India, with respect to Serum Institute. SynBio, Pharmsynthez and Serum Institute are responsible for funding the research, development and commercialization of each drug candidate in those territories at their own expense. The out-license agreements contain provisions that allow the Company access to all underlying research materials and to receive royalties related to any of these drug candidates that may be approved and marketed in those territories. The Company utilizes its access to that data to determine which of those twelve drug candidates it believes are worthwhile to pursue for research, development and commercialization in the US and elsewhere.

The Company's strategy is to develop its orphan drug candidates through to regulatory approval. The Company then plans to commercialize those orphan drug candidates. Non-orphan drug candidates vested in its pipeline via its collaborations include ErepoXen®; polysialylated oxyntomodulin, for diabetes and obesity; and a Multiple Sclerosis vaccine candidate, MyeloXen™. The Company intends to develop these candidates to a stage that will enable it to seek profitable out-licensing arrangements with major pharmaceutical companies for further development and eventual commercialization, in exchange for milestone payments and royalties from product sales. Its collaborative out-licensing agreements relating to the platforms are an integral part of its early-stage strategy.

Even with regard to its strategy of current and planned future co-development collaborations and out-licensing, the Company must raise additional capital in order to develop its drug candidates to the point of commercialization. The Company's management will regularly make evaluations in concert with the Company's Board of Directors as to when to seek additional capital through various financing structures for the purpose of pursuing its business strategy. Although the Company is optimistic, there can be no assurance that it will be successful in raising additional working capital in the future. If not successful, the Company's business could be adversely affected.

**Reliance on Principal Customer**

Since August 2005, Baxter has been a principal customer of the Company, accounting for the substantial portion of the Company's revenue, through up-front payments and fee for services. Please refer to the agreement with Baxter under the caption "Significant Co-Development Collaborations and Strategic Arrangements" below for further information regarding the importance of the Company's relationship with Baxter.

**Our Technologies**

***PolyXen®***

PolyXen® is a platform technology based on the concept of polysialylation. PSA is a polymer chain composed of sialic acids linked together. Sialic acid is found on the external membrane of a number of cell types in the body. In addition, it is a natural component expressed on the external membrane on a number of bacterial types. The chain of sialic acid molecules can be anywhere from 4 to over 200 individual sialic acid molecules in length. The Company uses the linear form of PSA called colominic acid. It is a natural, hydrophilic polymer isolated from a bacterial strain of E. coli K1. This natural glycan is negatively charged, non-toxic and is biodegradable. The PSA chain is extensively purified from large-scale bacterial cultures under Current Good Manufacturing Practices conditions, modified to specified sizes and then attached to defined sites on the therapeutic. Both the site of attachment and the length of the PSA chain can enhance the properties of the therapeutic.

The major effect of PSA addition to a therapeutic is to change the apparent hydrodynamic radius of the molecule. This physical alteration then changes a number of the biological characteristics of the therapeutic. The most noticeable, and perhaps the most relevant, is an extension of the lifetime of the therapeutic in blood circulation. This is due to the increase in the size of the drug which results in a decrease in the clearance rate of the molecule in the kidney by glomerular filtration. In addition, studies have shown changes in other biological characteristics such as protease sensitivity and temperature sensitivity. An added benefit is that the conjugated molecules are less viscous in solution than comparable other technologies, providing the potential for easier injections and fewer injection site reactions. Furthermore, we believe that adding PSA to an existing marketed drug may allow for patent extension, thereby potentially creating a patent-protected next generation candidate.

The current standard for certain biologic delivery agents is Polyethylene Glycol ("PEG") which is attached similarly to therapeutics. The mode of action between PSA and PEG is similar, increasing the apparent size of the molecule and thereby increasing the circulating time of the drug in the blood. PEGylation is a proven technology that can offer advantages in terms of pharmacokinetics and pharmacodynamics for therapeutics over non-modified, first generation molecules. There are a number of PEG-modified molecules on the market, in clinical trials and under development. However, PEGylation is considered to have limitations, such as non-biodegradability and, at high doses, may thereby result in intra-cellular accumulation, potentially leading to vacuole formation in the cells. In contrast, because PSA is a chain of sialic acids, which are natural constituents of the human body, it is biodegradable into individual sialic acid units. In addition, PEG in many cases has been shown to be immunogenic when coupled to proteins and can activate the complement system. PEG has also demonstrated limitations on a few select molecules. PSA has to date been shown to be non-immunogenic. We believe PSA may provide the advantages of PEG without many of its disadvantages, offering a potential advance over PEG molecules.

***OncoHist™***

OncoHist™ is based on research covered under our patent portfolio related to novel functions of histones. Histone H1 has strong anti-proliferative properties against cancer cells of different histological origin. This has been demonstrated extensively for hematologic malignancies, such as leukemias, lymphomas, and myelomas, and also for tumors from other tissues. Susceptibility of cells to the cytotoxic effect of histones is determined by the ability of histone H1 to selectively destabilize the tumor cell membrane, which results in cell death.

A novel form of the molecule was developed by the Company and a patent filed for the protection of the new chemical entity, N-bis-met-histone 1.3 (OncoHist™) in use against cancer, providing patent protection at least until 2027. The activity of the new molecule was tested on 58 tumor cell lines derived from various tissues. Hematopoietic tumor cell lines were found to be among the most sensitive cell lines. The mechanism of action appears to be novel, involving the binding of OncoHist™ to the cell membrane, which is completely different than that of other therapeutic agents on the market for hematopoietic cancers. Confirmatory work on this mode of action with more detailed analyses is being completed by Dana-Farber Cancer Institute ("Dana-Farber"). Hematopoietic tumor lines resistant to current chemotherapeutic agents have shown sensitivity to OncoHist™.

OncoHist™'s potency and potential to inhibit growth of cells from various histological origins were confirmed through in-vitro testing against the US National Cancer Institute 60 ("NCI-60"). OncoHist™ was awarded orphan drug designation (Orphan Medicinal Product Designation ("OMPD")) for treatment of AML by the European Commission in December 2007 and by the FDA in October 2008. OncoHist™ was awarded an additional OMPD status for Acute Lymphocytic Leukemia ("ALL") by the EMA.

A Phase I-II trial to evaluate the safety and tolerability of OncoHist™ was conducted in 2008 at Saarland University, in Germany with 22 AML patients. Tolerability and safety results were favorable with indications of the drug being immunologically safe. Clinical effects were noted in seven patients with three partial remissions. Most notably, two patients who had received two treatment cycles each experienced stabilization of their disease for 7 and 17 months.

A clinical safety trial with a planned 120 AML patients was in progress and being performed by SynBio in clinical centers in the Russian Federation. The aim of this trial was to examine the potential benefits of OncoHist™ in combination with standard HAM chemotherapy: high dose cytarabine with mitoxantrone. During execution of the SynBio AML trial the Russian Ministry of Health issued changes in their standard of care for treating AML patients. High dose cytarabine chemotherapy was determined to offer no benefits in terms of efficacy as compared to lower dose therapy and was discontinued. The study was stopped and the study report is now in progress.

Based upon our analysis of data from the preliminary AML trial performed by SynBio in the Russian Federation, and data developed in Germany at Saarland University, the Company has undertaken pre-clinical development and IND-enabling animal studies in the US in support of a planned phase I/II(a) IND filing with the FDA in the first half of 2016. Xenetic has had a pre-IND meeting with the FDA to discuss the OncoHist AML program. The FDA comments will be addressed by time of IND submission. A Phase I/II Non-Hodgkin's Lymphoma ("NHL") safety trial has been completed in Russia. As an integral part of the Company's strategy, we intend to await later stage clinical data on NHL to determine whether to progress this candidate into US FDA trials.

**Other Technologies**

***ImuXen®***

ImuXen® is a patented platform technology based on the concept of simultaneous delivery of multiple Active Pharmaceutical Ingredients ("APIs") as antigens within the same liposome. The liposomes are composed of lipids that encapsulate an aqueous core. The APIs can be trapped in the core, be associated with the lipids, or both. Proteins, peptides, nucleic acids, polysaccharides and live or inactivated infectious agents can all be used as an API with the same liposome. Both the size and the lipid composition can be controlled which affects the biological properties of the liposome. Manufacturing involves the passive entrapment of the vaccine APIs by freeze drying commercially available liposomes with the antigens of interest.

Having multiple APIs formulated with the same liposome allows simultaneous delivery of the antigens to the same antigen-presenting cell. This may allow a more efficient immune response to all the agents presented. In addition, it is possible that multiple vaccines can be delivered with a single injection. Relevant pre-clinical studies have indicated a reduction in the dose required, a reduction in the number of doses required and a faster immune response time. This efficient immune response also may allow for use of antigens that traditionally give a poor antibody response.

This technology is not currently the focus of clinical development for the Company. However through a license agreement with Pharmsynthez, there is a novel Multiple Sclerosis vaccine that is in clinical development in Russia.

A Phase I/II clinical trial to treat Relapsing Remitting Multiple Sclerosis and Secondary Progressive Multiple Sclerosis is in progress by Synbio in the Russian Federation. Peptides corresponding to antigenic sections of basic myelin protein were encapsulated within liposomes to be used as the therapeutic agent (MyeloXen™). Administration of MyeloXen™ to patients has occurred and follow-up monitoring is in progress. As an integral part of the Company's strategy, we await later stage clinical data on MyeloXen™ to determine whether to progress this candidate into FDA trials and eventual out-licensing.

**Significant Co-Development Collaborations and Strategic Arrangements:**

***Baxter Healthcare SA and Baxter Healthcare Corporation***

In August 2005, the Company entered into an exclusive research, development, license and supply agreement with Baxter Healthcare SA ("Baxter SA") and Baxter Healthcare Corporation (together referred to as "Baxter") to develop products with an extended half-life of certain proteins and molecules using the Company's patent protected PolyXen® technology whereby polysialic acid ("PSA" – a chain of polysialic acids) is conjugated with Baxter's proprietary molecule(s) designed to create a longer-acting haemophilia drug, a polysialylated recombinant Factor VIII ("rFVIII") protein than what is currently available on the market. Baxter also has rights that extend to treatments of the failure of blood to coagulate. Baxter expects to commence human clinical trials on this novel drug candidate during the first half of 2016.

This agreement has been amended several times since 2005, most recently in January 2014. The January 2014 amendment provides for increased future development, regulatory, sales and deadline extension receipts, restructured target deadlines and royalty receipts on potential net sales. The Company is entitled to up to $100 million in potential development, regulatory, sales and deadline extension receipts, which are contingent on the performance of Baxter achieving certain milestones. The Company is also entitled to royalties on potential net sales. In connection with this amendment, Baxter SA also made a $10 million equity investment at a price of $0.935 per share, which is a post money market cap of approximately $140 million in the Company in exchange for 10,695,187 shares of the Company's common stock during January 2014.

Through December 31, 2014, the Company and Baxter continued to engage in research and development activities. No amounts were recognized as revenue during the year ended December 31, 2014. $1 million was received and recognized as revenue during the year ended December 31, 2013 related to this collaboration as the Company's continued performance or future obligations were considered inconsequential or perfunctory. Since August 2005, the Company has received approximately $19 million from Baxter that includes milestone receipts, fees for services and a $10 million purchase of common stock of the Company in January 2014. The Company received a non-refundable $2 million payment from Baxter in 2010 and granted Baxter warrants to purchase approximately 4.6 million new shares of common stock of the Company in connection with the 2010 amendment to the Baxter Agreement.

Baxter is in the pre-clinical phase of its development effort in connection with this collaboration. Baxter has agreed to meet a number of clinical milestones with strict timelines under the 2014 amendment relating to: Clinical Trial Authorization submission, Final Clinical Study Report and Biologics License Application ("BLA") submission. There are very limited provisions to further modify the Baxter Agreement. There can be no assurance if or when Baxter will actually achieve any of the due diligence milestones.

Baxter is a related party of the Company, with a share ownership of approximately 8.7% of the total issued common stock as of December 31, 2014.

***SynBio LLC***

In August 2011 the Company entered into a stock subscription and collaborative development agreement with SynBio (the "Co-Development Agreement") pursuant to which the Company granted SynBio an exclusive license to develop, market and commercialize certain drug candidates utilizing molecules based on the Company's PolyXen® and OncoHist™ technologies in the Russian market and the Commonwealth of Independent States (the "CIS") (including Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Tajikistan, Turkmenistan and Uzbekistan), collectively the "SynBio Market". In exchange for the Company granting to SynBio those certain license rights, SynBio granted an exclusive license to the Company to use any SynBio pre-clinical and clinical data generated by SynBio, at its own expense, in connection with those development efforts and to engage in the development and commercialization of drug candidates that may arise from the collaboration in any territory outside of Russia and the CIS based upon the Co-Development Agreement.

The Company hopes and expects to mitigate certain risks of drug development by reviewing human clinical data arising out of this collaboration with SynBio before the Company considers taking the particular drug candidate into FDA and EMA trials. Under the Co-Development Agreement, SynBio is responsible for progressing six new product candidates through human proof of concept trials in Russia as primary validation for the initiation of EMA/FDA clinical trials by the Company. The primary goal of the Co-Development Agreement is to research and develop drug candidates for planned commercialization using SynBio and the Company's combined respective expertise and technologies. Drug candidates must meet the success criteria as decided upon by a joint steering committee, which includes representation from both SynBio and the Company, where the Company has the right to appoint the Chair who has the casting vote. Once a potential drug candidate is selected, clinical trials will be separately conducted by each company in their respective territories with the goal to achieve regulatory approval of the products for commercial sale.

SynBio is wholly are responsible for funding and conducting their own research and clinical development activities in Russia as the Company is wholly responsible for funding and conducting their own research and clinical development activities in the US, Europe and elsewhere ex-Russia and the ex-CIS regions. There are no milestones or other research related payments provided for under the Co-Development Agreement other than fees for the provision of each party's respective research supplies based on their technology and royalties payable to the Company based on SynBio sales. For the years ended December 31, 2014 and 2013, the Company has recognized no supply service revenues in connection with the Co-Development Agreement.

Concurrent with entering into the Co-Development Agreement, the Company entered into a stock subscription agreement with SynBio pursuant to which the Company sold SynBio approximately 35.5 million shares of newly issued common stock for cash of approximately $18.6 million.

In furtherance of our co-development clinical objectives, on December 31, 2014 the Company granted to SynBio certain warrants that contain vesting triggers based on the achievement by SynBio of certain clinical development objectives within specific timeframes. This grant consisted of a warrant to purchase 6,745,000 new shares of common stock at an exercise price of $0.77 per share ("SynBio 2014 Warrant"). Simultaneously with the SynBio 2014 Warrant grant, the Company granted additional warrants to purchase 320,000 aggregate new shares of common stock to SynBio and Pharmsynthez non-director designees under the same terms and conditions of the SynBio 2014 Warrant. Pharmsynthez is a related party of SynBio and a collaboration partner of the Company. As part of this transaction, the warrant granted to SynBio in 2011 was canceled and of no further force and effect. The SynBio 2014 Warrant expires on December 30, 2019 and no warrants were exercised during the year ended December 31, 2014.

Pursuant to the Relationship Deed signed concurrent with the 2011 Co-Development Agreement and subscription, the Company granted SynBio (as Controlling Shareholder) the right to appoint two directors to the extent their shareholding is greater than 40% in the Company. The Relationship Deed of 2011 was replaced in January 2014 with a Director Appointment Agreement containing that same provision. Further undertakings therein state that, as long as the Controlling Shareholder holds more than 25% of the Company's common stock, all transactions and relationships between it and the Company will, (a) be at arm's length and on a normal commercial basis; (b) it will not seek to exercise any day-to-day operational or managerial control over the business of the Company, nor, (c) influence any director or non-executive director in any way in regard to the conduct of the Company's business. The agreement contains further provisions relating, *inter alia*, to: nominee board appointments, conflicts of interest, acting in good faith and terms of confidentiality. SynBio is an affiliate of the Company, with a share ownership of approximately 41.6% of the total issued common stock as of December 31, 2014.

***Serum Institute of India Limited***

In the period from 2004 through 2011, the Company entered into and amended certain license and supply agreements with Serum Institute. The original license agreement with Serum Institute was a collaborative Development and Manufacturing Arrangement ("DMA") to develop agreed upon potential commercial product candidates using the Company's PolyXen® technology. Serum Institute then endeavored to further develop the potential commercial product candidates and eventually initiate pre-clinical and clinical trials at their own cost. The agreement was amended in 2011, resulting in the surrender of development rights for 14 potential commercial product candidates in 2012, which were vested to Serum Institute under the terms of the previous agreements, back to the Company.

Following the 2011 amendment, Serum Institute retained an exclusive license to use the Company's PolyXen® technology to research and develop one potential commercial product, Polysialylated Erythropoietin ("PSA-EPO"). Serum Institute will be responsible for conducting all pre-clinical and clinical trials required to achieve regulatory approvals within territories outside of certain predetermined territories assigned to the Company, which include the US, the European Economic Area, and Japan, among other territories, at Serum Institute's own expense. The royalty payment schedule based on net revenues on the future commercial sales of PSA-EPO under the DMA was also modified as a result of the 2011 amendment. Royalty payments are payable by Serum Institute to the Company for net sales to certain customers in the Serum Institute sales territory. Royalty payments are payable by the Company to Serum Institute for net sales received by the Company over the term of the license. No royalty revenue or expense was recognized by the Company related to the Serum Institute arrangement during the years ended December 31, 2014 and 2013. There are no milestone or other research-related payments due under the DMA. Through December 31, 2014, the Company and Serum Institute continued to engage in research and development activities with no resultant commercial products.

In furtherance of our co-development clinical objectives, on December 31, 2014 the Company granted to Serum Institute certain warrants that contain vesting triggers based on the achievement by Serum Institute of certain clinical development objectives within specific timeframes. This grant consisted of a warrant to purchase 3,200,000 new shares of common stock at an exercise price of $0.77 per share ("Serum 2014 Warrant"). Simultaneously with the Serum 2014 Warrant grant, the Company granted additional warrants to purchase 160,000 aggregate new shares of common stock to Serum Institute non-director designees under the same terms and conditions of the Serum 2014 Warrant. The Serum 2014 Warrant expires on December 30, 2019 and no warrants were exercised during the year ended December 31, 2014.

In addition, the DMA allows for Serum Institute to nominate a non-executive director to the Board of Directors of the Company as long as Serum Institute or its subsidiaries holds at least 6% of the Company's common stock. Serum Institute is a related party of the Company, with a share ownership of approximately 9.2% of the total issued common stock as of December 31, 2014.

***OJSC Pharmsynthez***

In November 2011, the Company entered into a collaborative research and development license agreement with OJSC Pharmsynthez (the "Pharmsynthez Arrangement") pursuant to which the Company granted an exclusive license to Pharmsynthez to develop, commercialize and market six product candidates based on the Company's PolyXen® and ImuXen® technology anywhere within Russia and the CIS. In exchange, Pharmsynthez granted an exclusive license to the Company to use any pre-clinical and clinical data developed by Pharmsynthez, within the scope of the Pharmsynthez Arrangement, and to engage in further research, development and commercialization of drug candidates in any territory outside of Russia and the CIS at the Company's own expense.

In accordance with the terms of the Pharmsynthez Arrangement, the Company licensed certain PolyXen® and ImuXen® technology rights for use in Russia and the CIS as well as certain clinical and research data developed by the Company on the six product candidates to Pharmsynthez.

The Company hopes and expects to mitigate certain risks of drug development by reviewing human clinical data arising out of this collaboration with Pharmsynthez before the Company takes the particular drug candidate into FDA and EMA trials, a strategy designed to mitigate drug development risks. Under the agreement, Pharmsynthez is responsible for progressing six new drug candidates through human proof of concept trials in Russia as primary validation prior to the initiation of EMA/FDA clinical trials by the Company outside of Russia. The license agreement will operate alongside the current arrangements which the Company has entered into with SynBio, discussed above.

A joint steering committee where the Company has the right to appoint the Chair who has the casting vote was established to facilitate the communication of scientific data and to assist generally with each party's research decisions and to monitor research and development progress under the Pharmsynthez Arrangement.

Pharmsynthez is wholly responsible for funding and conducting their own research and clinical development activities in Russia. The Company is wholly responsible for funding and conducting its own research and clinical development activities in the US, Europe and the rest of the world outside of Russia and the ex-CIS regions. There are no milestones or other research related payments provided for under the Co-Development Agreement other than royalties.

Pharmsynthez is a related party of SynBio, which is an affiliate of the Company. In addition, one of the Company's directors is also a director of SynBio and Pharmsynthez.

**Tabular Summary of Drug Candidate Programs**

***Xenetic Corporate Programs***

| Product Candidate | Indication | Clinical Developer | Headquarters | Program Name/Developmental Stage |
|---|---|---|---|---|
| ErepoXen® | Anemia | Xenetic | US | **PSA-EPO-06**: ICH Compliant Phase II in-process being conducted in Australia and New Zealand. Cohorts 1 and 2 completed |
| OncoHist™ AML | Acute Myeloid Leukemia | Xenetic | US | **Onc-AML-01**: Pre-clinical studies and development ongoing |

***Xenetic Collaborative Partner Programs***
*(alphabetical by clinical developer)*

| Product Candidate | Indication | Clinical Developer | Headquarters | Program Name/Developmental Stage |
|---|---|---|---|---|
| Factor VIII | Hemophilia | Baxter | US | **PSA-FVIII**: IND development being conducted by Baxter |
| PulmoXen™ | Cystic Fibrosis | Pharmsynthez | Russia | **PMO-CF-01**: Phase I completed |
| MyeloXen™ | Multiple Sclerosis | Pharmsynthez | Russia | **IMU-MS-01**: Phase I dose ranging study is complete |
| ErepoXen® | Anemia | Serum Institute | India | **PSA-EPO-03**: Phase II(a) intravenous and subcutaneous human clinical trials conducted in India are ongoing |
| ErepoXen® | Anemia | SynBio | Russia | **PSA-EPO-05**: Russian Phase II(b)/III in progress |
| OncoHist™ AML | Acute Myeloid Leukemia | SynBio | Russia | **Onc-AML-02**: Russian Phase II ongoing |
| OncoHist™ NHL | Non-Hodgkins Lymphoma | SynBio | Russia | **Onc-NHL-01**: Russian Phase II dose ranging studies are completed in Russia |

**Most advanced product candidate in the Company pipeline: ErepoXen®**

The Company's drug candidate that is currently the most advanced in its clinical pipeline is ErepoXen® (polysialylated erythropoietin ("PSA-EPO")) which uses the Company's PolyXen® technology for the treatment of anemia in Chronic Kidney Disease ("CKD") patients. ErepoXen® is in a Company-sponsored Phase II escalating repeat subcutaneous dose-ranging study in Australia and New Zealand for pre-dialysis CKD patients. This trial is designed to be compliant with the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use ("ICH"). ErepoXen® has also been a co-development project with our long-established strategic partner, Serum Institute, and is in Phase II(a) clinical trials in India for intravenous administration to patients on dialysis. In addition, ErepoXen® is also in a 150 patient Phase II(b)/III clinical trial in Russia to directly compare ErepoXen® to Aranesp. The Company expects SynBio to enter the commercialization and marketing stage of ErepoXen® in the Russian and CIS markets, as the first market launch for a PSA candidate.

The Company's commercialization strategy for ErepoXen®, being a potentially mainstream drug addressing a substantial global market, includes seeking an out-license arrangement for the continuing development of ErepoXen® as either a Phase II(b) or Phase III candidate with a well-capitalized license partner more experienced at taking drug candidates through the latter stages of human clinical trials and better able to execute a global market launch. If successful, this strategy could:

(a) be the beginning of the monetization of the Company's IP investment to date in ErepoXen® by way of an upfront license payment plus milestone payments as the product is advanced through the clinic; and
(b) potentially reduce the timeline for incoming royalty revenues if ErepoXen® is taken to market by an already leading provider with an established market presence.

The ErepoXen® strategy, when implemented, should have the effect of decreasing demands on the Company's own financial and working capital resources, allowing those resources to be applied towards the in-house development and marketing of new orphan and rare disease candidates where the Company is better able to maintain financial and clinical control throughout the process from pre-clinical development, through IND filing, human clinical trials, and potentially market approval and product launch.

In addition, ErepoXen® has also received regulatory approval to enter Phase II(b)/III human clinical trials in Russia. The Company expects SynBio (one of its Russian co-development partners) to enter the commercialization and marketing stage of ErepoXen® in the Russian and CIS markets as the first market launch for a PSA candidate.

**Second most advanced product candidate in the Company pipeline: OncoHist™**

The Company's second most advanced drug candidate is OncoHist™ AML. Continuing development of OncoHist™ is the top 2015 priority for the Company in the US. The Company, utilizing clinical material supplied by SynBio, commenced pre-clinical toxicity studies during 2014 that are expected to be completed in the first half of 2015. In addition, the Company is in the process of establishing a second source supplier of OncoHist™ cGMP material suitable for humans in Phase I/II(a) clinical trials. We intend to commence clinical trials in the US upon completion of IND enabling studies, establishment of a source of cGMP material suitable for those trials and upon raising additional working capital to support those trials. Based on current estimates, we do not expect to commence clinical trials before the end of 2015. Certain OncoHist™ data, generated by SynBio, that is available to us for analysis has advanced our understanding of this drug candidate at a reduced cost to the Company when compared to the cost of the Company generating the same data using its own capital.

**Other product candidates in the Company pipeline**

The Company believes certain additional orphan and non-orphan oncology drug candidates may be developed utilizing certain of our existing and future pre-clinical and clinical data. Specifically, we expect to be able to utilize the results from substantially all of our pre-clinical toxicity and certain other pre-clinical data generated in the development of OncoHist™ AML for several other blood cancer indications focused on orphan indications.

We also believe that the platform nature of our technologies should allow us to pursue additional drug candidates by leveraging certain existing and future scientific data to be developed under our PolyXen® and ImuXen® technology programs.

**Xenetic Corporate Programs**

***PSA-EPO-06: Xenetic ErepoXen® Clinical Trial***

This is designed to be an ICH compliant Phase II open label clinical, sequential multiple dose finding study for subcutaneously administered PSA-EPO in CKD patients not on dialysis and not receiving erythropoiesis stimulating agents. It is being conducted in Australia and New Zealand. Patients with hemoglobin levels between 8 and 10 grams per deciliter ("g/dL") were given the drug candidate once every two weeks. If the hemoglobin level increases to between 10 and 12 g/dL, the patient is moved to once every four weeks administration. The patient's pharmacodynamic, pharmacokinetic and immunogenic parameters are followed for the duration of the trial. Dose levels in an escalating form will then be administered. Safety and other parameters will be examined at the end of each dosing cohort before moving onto the next dose level. The first two cohorts of patients have been completed. There were no Serious Adverse Events ("SAEs") attributable to PSA-EPO reported thus far. The third cohort of patients at a higher dose level is in progress. The endpoint is to determine a dose of PSA-EPO that is safe and will move the patient's hemoglobin level into the 10 to 12 g/dL range.

The costs for this trial are being borne by the Company. Costs will be dependent on how many cohorts will be treated. The final results from the second cohort are expected to be reported during the first half of 2015. Clinical material was manufactured for the Company by Serum Institute. The trial is being run by Novotech Pty Limited ("Novotech") of Australia.

***ONC-AML-01: Xenetic OncoHist™ Clinical Trial***

The Company expects to submit an IND filing for Phase I/II(a) clinical trials for AML to the FDA and commence clinical trials, but not before the end of 2015. We expect this to be an open label increasing dose ranging study to assess the safety, tolerability and efficacy of OncoHist™ for adult patients with refractory or relapsed AML. This trial will be conducted in the US. Data from the previously completed work by Saarland University's Phase I clinical trial and the SynBio clinical trials will be used to aid in the design of the clinical protocol. We expect the Phase I/II(a) clinical trial material to be produced by a cGMP compliant manufacturing facility. Selection of the Clinical Research Organization ("CRO") to run the trial is in progress.

The costs for the clinical trial are being borne by the Company. The Company will need to raise additional capital prior to commencing Phase I/II(a) clinical trials. The OncoHist™ technology was acquired as part of the Company's acquisition of SymbioTec GmbH ("SymbioTec") in January 2012 and was valued at $9.6 million as of the acquisition date.

**Xenetic Collaborative Partner Programs**

Under the terms of the relevant license agreements with the various parties, the Company provides neither capital nor human resources to the clinical developments of the various product candidates thus licensed for development by our collaborative partners whose sole responsibility is to meet the timelines associated with each program. We use the data generated from these jurisdictions as a means of understanding the clinical validity-human response of the drug before pursuing FDA and EMA trials, this having been a long-established development strategy for the Company as a means of maximizing the development potential of the Company's product pipeline while minimizing the capital exposure associated with such objective.

Notwithstanding that there has been a history of delays in the clinical programs being pursued by our partners in both Russia and India, based on the data that has been available to us, we have accomplished this objective with both OncoHist™ and ErepoXen®, the two product candidates which are currently the primary focus of our efforts and upon which we are now devoting our capital and human resources. Accordingly, any program delays on these candidates outside the purview of the FDA or EMA will not have a negative impact on the Company pipeline.

***PSA-FVIII: Baxter Factor VIII Pre-Clinical Program***

PSA-recombinant Factor VIII has been developed as a long acting therapeutic to treat hemophilia A. Baxter is running this program, which is in the IND development phase. Baxter has agreed to meet strict due diligence time milestones based on: Clinical Trial Authorization submission in respect of Phase I/II clinical trials, Final Clinical Study Report Phase I/II and BLA submission all by fixed dates per the contract. The total cost of this program is being borne by Baxter. There can be no assurance if or when Baxter will actually achieve any of these due diligence milestones. We expect Baxter will file an IND for clinical trials in the US or Europe during the first half of 2016. The stated goal of Baxter is to have a significantly longer-acting FVIII to remain the world's leader in Hemophilia therapies.

***PMO-CF-01: Pharmsynthez PulmoXen™ Clinical Trial***

This is a Phase I(a) open label two dose safety study for inhaled PSA-DNase 1 in healthy volunteers and has been completed and reported on April 7, 2014. The study is being conducted in Russia. No adverse events were reported so far and lung function was reported to be normal. A clinical trial with CF patients is in start-up stage (regulatory applications). The total cost of the trial is being borne by Pharmsynthez. The trial is being run by a partner-sponsored CRO in Russia, Belarus and Ukraine.

If and when satisfactory human clinical data comes out of this collaboration, and provided that the Company is sufficiently confident that the drug candidate is well-tolerated and effective for this indication, the Company plans to pursue its own development program for this candidate. However, the Company would have to raise additional capital to pursue its own development of this drug candidate.

***IMU-MS-01: Pharmsynthez MyeloXen™ Clinical Trial (Multiple Sclerosis)***

This was a Phase I open label clinical sequential dose finding study for subcutaneously administered MyeloXen™ (liposomes containing peptides for basic myelin protein) in healthy volunteers and patients. This was a proof-of-concept study to show the influence of MyeloXen™ on catalytic anti-MBP levels and activities. The study was conducted in Russia and is complete. The study report is under final review to be submitted to the Russian MoH. The total cost for the clinical trial was borne by Pharmsynthez. The clinical material was manufactured by Pharmsynthez. The clinical trial was run by a partner-sponsored CRO in Russia.

If and when satisfactory clinical patient data comes out of this collaboration that provides the Company a level of comfort that the drug candidate is well-tolerated and effective, the Company plans to pursue its own development program for this candidate. However, the Company would have to raise additional capital to pursue its own development of this drug candidate.

***PSA-EPO-03: Serum Institute ErepoXen® Clinical Trial***

This is a Phase II(a) open label clinical, sequential single dose finding study for intravenously administered PSA-EPO for CKD patients who are on dialysis. This trial follows the successful completion of two subcutaneous PSA-EPO clinical trials in India. The first was a Phase I single dose range finding study for subcutaneously administered PSA-EPO in healthy volunteers. The second was a Phase II single dose range finding study for subcutaneously administered PSA-EPO in CKD patients not on dialysis. All trials are being conducted in India. The first two cohorts of patients have been completed. There were no Serious Adverse Events ("SAEs") attributable to PSA-EPO reported thus far. The third cohort of patients at a higher dose level is in progress. The endpoint of the trial is to determine the maximum tolerated single dose of PSA-EPO. The total cost of the clinical trial is being borne by Serum Institute and the clinical material was manufactured by Serum Institute. The clinical trial is being run by a partner-sponsored CRO in India.

***PSA-EPO-05: SynBio ErepoXen® (Epolong) Clinical Trial***

This is a Phase II(b)/III open label clinical, randomized, comparative, multiple dose study for subcutaneously administered ErepoXen® in CKD patients not on dialysis and not receiving erythropoiesis stimulating agents. Patients are compared to a control arm with Aranesp® (darbepoetin alfa). The study is being conducted in the Russian Federation and is currently in progress. In 2014, a protocol amendment was implemented and the starting dose was increased based on interim data and the data monitoring board decision. The new protocol amendment is ready to be submitted to the Russian Ministry of Health (the "Russian MoH"). The total cost for this clinical trial is being borne by SynBio. The clinical material was manufactured by Serum Institute. The clinical trial is being run by a partner-sponsored CRO in Russia.

***ONC-AML-02: SynBio Arahist-09 Clinical Trial***

This was a Phase II open label two dose level, randomized comparative study to assess the safety, tolerability and efficacy of OncoHist™ in combination with HAM (high dose cytarabine chemotherapy) in adult patients with refractory or early relapsed AML. This study was conducted in Russia. Patients received one cycle of HAM regimen (one week) and one cycle of OncoHist™ regimen (three times per week for three weeks). The HAM regimen was based on the then current standard of care in Russia. This standard of care was changed by the Russian Ministry of Health. The study has be stopped and the study report is currently in progress. The total cost of the trial was borne by SynBio. The clinical material for this OncoHist™ trial was manufactured at the Shemyakin Institute in Moscow for SynBio. The trial was run by a partner-sponsored CRO in Russia.

***ONC-NHL-01: SynBio Anahoret Clinical Trial***

This was a Phase II open label increasing dose ranging study to assess the safety, tolerability and efficacy of OncoHist™ as a single agent in treating NHL. This study was conducted in Russia. The trial is complete and the report submitted to the Russian MoH. It was shown that OncoHist™ was well tolerated in this trial. The total cost of the trial was borne by SynBio. The clinical OncoHist™ drug product was manufactured at the Shemyakin Institute in Moscow for SynBio. The trial was run by a partner-sponsored CRO in Russia.

If and when satisfactory clinical patient data comes out of this collaboration that provides the Company a level of comfort that the drug candidate is well-tolerated and effective, the Company plans pursue its own development program for this candidate. However, the Company would have to raise additional capital to pursue its own development of this drug candidate.

**Patents and Proprietary Rights**

The Company has several drug product candidates under development, each protected by patent and pending patent applications in the United States and the rest of the world.

Xenetic has received patent protection for several therapeutics that have been linked to a polysialic acid. These include PSA-erythropoietin, PSA-insulin and PSA-insulin like protein, PSA-Factor VIII, PSA-DNAse I and PSA-granulocyte colony stimulating factor. Further Xenetic's portfolio includes patents cover methods to prepare proteins that are linked to a polysialic acid. These patents include coverage for linking a PSA to a protein in a high pH solution and through a process for producing an aldehyde derivative of a sialic acid through the opening and oxidation of a sialic acid unit. The linkage can be at the N-terminus.

Xenetic has received patent protection for the production of PSA and the removal of endotoxin during the purification process. The removal of endotoxin occurs through, for instance, the addition of a high pH solution to the PSA and through a process to separate a polydisperse ionically charged polysaccharide, such as PSA, into fractions of different average molecular weight through the use, for instance, of a column and elution buffers with different and constant ionic strength and/or pH, resulting in a fractionated polysaccharide that has a molecular weight polydispersity of 1.1 or lower.

Xenetic also has patents that cover its OncoHist™ product. These include recently allowed patents covering the OncoHist™ composition and claims for the use of OncoHist™ to treat cancer, including leukemia. The OncoHist™ portfolio also includes patents that cover the use of a histone protein as an antibiotic and to threat thrombocytopenia and further as an antimicrobial component of a personal care product.

The Company's portfolio also includes in-licensed patents from Ploughshare Innovations, a licensing arm of the United Kingdom Department of Defense, in connection with MyeloXen™ technology. The Company has no current clinical development efforts ongoing at this time that fall within the bounds of the Ploughshare Innovations in-license. To the extent that such efforts are ongoing, such efforts are being undertaken by a collaborative partner, though the rights under the in-license (e.g. for the patents) lie with the Company and are subject to a sublicense provided to the collaborative partner. This includes a method used to entrap a water soluble drug within a liposome when the drug is mixed with a mono or disaccharide. This patent portfolio fits well with the Company's liposome patents and pending applications that include those that cover using liposomes with an entrapped complex of a DNA operatively encoding antigen to induce an immune response in a human or animal and methods to form liposomes.

The Company currently owns 147 US and international patents and over 90 pending patent applications that cover various aspects of our technologies. We have filed patent applications, and plan to file additional patent applications, covering various aspects of our PolyXen® technology platform covering polysialylation and advanced polymer conjugate technologies, as well as proprietary product candidates including ErepoXen® and PulmoXen™. Additionally, our patents and patent applications cover polymer architecture, drug conjugates, formulations, methods of manufacturing polymers and polymer conjugates and methods of administering polymer conjugates. In addition, our patent portfolio contains patents and patent applications that encompass our OncoHist™ technology platform including use of histones for the treatment of different cancers. The OncoHist™ patent portfolio, acquired as part of our acquisition of SymbioTec GmbH in January 2012, includes OncoHist™, a bis-Met histone. Our patent strategy is to file patent applications on innovations and improvements to cover a significant majority of the major pharmaceutical markets in the world. Generally, patents have a term of 20 years from the earliest priority date (assuming all maintenance fees are paid). In some instances, patent terms can be increased or decreased, depending on the laws and regulations of the country or jurisdiction that issued the patent.

We also rely on trade secret protection for our confidential and proprietary information. No assurance can be given that we can meaningfully protect our trade secrets. Others may independently develop substantially equivalent confidential and proprietary information or otherwise gain access to, or disclose, our trade secrets. Thus, while we rely on trade secret protection and other unpatented proprietary rights for important proprietary technologies, any loss of such rights could harm our business, results of operations and financial condition.

In certain situations where we work with drugs covered by one or more patents, our ability to develop and commercialize our technologies may be affected by limitations in our access to these proprietary drugs. Even if we believe we are free to work with a proprietary drug, we cannot guarantee that we will not be accused of, or be determined to be, infringing a third party's rights and be prohibited from working with the drug or found liable for damages. Any such restriction on access or liability for damages would have a material adverse effect on our business, results of operations and financial condition.

The patent positions of pharmaceutical and biotechnology companies, such as ours, are uncertain and involve complex legal and factual issues. There can be no assurance that patents that have issued will be held valid and enforceable in a court of law. Even for patents that are held valid and enforceable, the legal process associated with obtaining such a judgment is time consuming and costly. Additionally, issued patents can be subject to opposition or other proceedings that can result in the revocation of the patent or maintenance of the patent in amended form (and potentially in a form that renders the patent without commercially relevant and/or broad coverage). Further, our competitors may be able to circumvent and otherwise design around our patents. Even if a patent is issued and enforceable, because development and commercialization of pharmaceutical products can be subject to substantial delays, patents may expire early and provide only a short period of protection, if any, following the commercialization of a products encompassed by our patent(s). We may have to participate in interference proceedings declared by the U.S. Patent and Trademark Office, which could result in a loss of the patent and/or substantial cost to us. Further, we understand that if any of our pending patent applications do not issue, or are deemed invalid following issuance, we may lose valuable IP protection.

US and foreign patent rights and other proprietary rights exist that are owned by third parties and relate to pharmaceutical compositions and reagents, medical devices and equipment and methods for preparation, packaging and delivery of pharmaceutical compositions. We cannot predict with any certainty which, if any, of these rights will be considered relevant to our technology by authorities in the various jurisdictions where such rights exist, nor can we predict with certainty which, if any, of these rights will or may be asserted against us by third parties. We could incur substantial costs in defending ourselves and our partners against any such claims. Furthermore, parties making such claims may be able to obtain injunctive or other equitable relief, which could effectively block our ability to develop or commercialize some or all of our products in the US and in other countries and could result in the award of substantial damages. In the event of a claim of infringement, we or our partners may be required to obtain one or more licenses from third parties. There can be no assurance that we can obtain a license to any technology that we determine we require on reasonable terms, if at all, or that we could develop or otherwise obtain alternative technology. The failure to obtain licenses, if required, may have a material adverse effect on our business, results of operations and financial condition. Further, we may not be able to obtain IP licenses related to the development of our drug candidates on a commercially reasonable basis, if at all.

It is our policy to require our employees and consultants, outside scientific collaborators, sponsored researchers and other advisors who receive confidential information from us to execute confidentiality agreements upon the commencement of employment or consulting relationships with us. These agreements provide that all confidential information developed or made known to the individual during the course of the individual's relationship with us is to be kept confidential and not disclosed to third parties except in specific circumstances. The agreements provide that all inventions conceived by an employee shall be our property. There can be no assurance, however, that these agreements will provide meaningful protection or adequate remedies for our trade secrets in the event of unauthorized use or disclosure of such information.

**Manufacturing and Supply**

The Company does not maintain the capability to manufacture its own material necessary to support its drug candidate development programs nor does it intend to acquire such capability as part of its present business strategy. The Company currently has agreements in place with Serum Institute whereby Serum Institute produces clinical materials for use in the development of drug candidates involving our PolyXen® technology. The Company is currently dependent on SynBio for clinical materials with respect to its OncoHist™ AML research programs. The Company is investigating second source alternative suppliers for its clinical materials. There can be no assurance that it will be successful or that if a second source is secured that it would be available on commercially reasonable terms or in a timely fashion should any disruption in supply from Serum Institute or SynBio occur.

**Government Regulation**

***General***

The development, testing, manufacture, labeling, marketing, and promotion of any drug, including all of our drug candidates, are subject to extensive regulation in the US by the FDA under the Federal Food, Drug and Cosmetic Act and by other federal, state, local and foreign government laws and regulations including in the UK, Germany, Russia and other countries in which we conduct business.

***The NDA Review Process***

The steps ordinarily required before a new drug, that is subject to NDA approval, may be marketed in the US include pre-clinical laboratory tests, further relevant testing, formulation studies, the submission to the FDA of an IND filing (which must become effective before clinical testing may commence) and adequate and well controlled clinical trials on human subjects to establish the safety and effectiveness of the drug for each indication for which FDA approval is sought. Satisfaction of FDA pre-market approval requirements typically takes several years and the actual time required may vary substantially based upon the type, complexity and novelty of the product, disease or condition for which the new drug is indicated.

Government regulation may delay or prevent marketing of potential products for a considerable period of time and requires substantial time, effort and financial resources on the part of a manufacturer. Success in early stage clinical trials does not assure success in later stage clinical trials. Data obtained from clinical activities is not always conclusive and may be susceptible to varying interpretations that could delay, limit, or prevent regulatory approval. Even if a product receives regulatory approval, later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market.

Pre-clinical tests include laboratory evaluation of product chemistry and formulation, as well as additional relevant trials to assess the potential safety and efficacy of the product. The conduct of the pre-clinical tests and formulation of compounds for testing must comply with federal regulations and requirements. The results of pre-clinical testing are submitted to the FDA as part of an IND.

A 30 day waiting period after the filing of each IND is required prior to the commencement of clinical testing in humans. If the FDA has not commented on or questioned the IND within this 30 day period, clinical trials may begin. If the FDA has comments or questions, the questions must be answered to the satisfaction of the FDA before initial clinical testing can begin. In addition the FDA may, at any time, impose a clinical hold on ongoing clinical trials. If the FDA imposes a clinical hold, clinical trials cannot commence or recommence without FDA authorization and then only under terms authorized by the FDA. In some instances, the IND process can result in substantial delay and expense.

Clinical trials typically involve the administration of the IND to volunteers or patients under the supervision of a qualified investigator. Clinical trials must be conducted in compliance with federal regulations and requirements, under protocols detailing the objectives of the trial and the parameters to be used in monitoring safety and effectiveness. Each protocol involving testing on US subjects must be submitted to the FDA as part of the IND. The study protocol and informed consent information for patients in clinical trials must also be approved by the Institutional Review Board at each institution where the trials will be conducted.

Clinical trials to support NDAs for marketing approval are typically conducted in three sequential phases, but the phases may overlap. In Phase I, the initial introduction of the drug into healthy human subjects or patients, the drug is tested to assess metabolism, pharmacokinetics and pharmacological actions and safety, including side effects associated with increasing doses. Phase II usually involves trials in limited patient populations to determine dosage tolerance and optimum dosage, identify possible adverse effects and safety risks, and provide preliminary support for the efficacy of the drug in the indication being studied. If a compound demonstrates evidence of effectiveness and an acceptable safety profile in Phase II evaluations, Phase III trials are undertaken to further evaluate clinical efficacy and to further test for safety within an expanded patient population, typically at geographically dispersed clinical trial sites. It is possible that Phase I, Phase II, or Phase III testing of product candidates may not be completed successfully within any specified time period, if at all.

After successful completion of the required clinical testing, generally an NDA is prepared and submitted to the FDA. FDA approval of the NDA is required before marketing of the product may begin in the US. The NDA must include the results of extensive clinical and other testing and a compilation of data relating to the product's pharmacology, chemistry, manufacture, and controls. The cost of preparing and submitting an NDA is substantial. Under federal law, the submission of an NDA is additionally subject to a substantial application user fee (unless eligible for a waiver or reduction), which currently range from $1,084,550 to $2,169,100, and the manufacturer and/or sponsor under an approved NDA are also subject to annual product and establishment user fees, currently exceeding $104,000 per product and $554,000 per establishment. These fees are typically increased annually.

The FDA has 60 days from its receipt of an NDA to determine whether the application will be accepted for filing based on the agency's threshold determination that the NDA is sufficiently complete to permit substantive review. Once the submission is accepted for filing, the FDA begins an in-depth review of the NDA. Under federal law, the FDA has agreed to certain performance goals in the review of NDAs. The user fee goal for review of most non-priority applications is ten months. However, the review process is often significantly extended by FDA requests for additional information or clarification of information already provided in the submission. The FDA may also refer applications for novel drug products or drug products which 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. The FDA is not bound by the recommendation of an advisory committee.

If FDA evaluations of the NDA and the manufacturing facilities and procedures, which typically involves an FDA on-site inspection, are favorable, the FDA may issue an approval letter or, in some cases, an approvable letter followed by an approval letter. An approvable letter generally contains a statement of specific conditions that must be met in order to secure final approval of the NDA. If and when those conditions have been met to the FDA's satisfaction, the FDA will typically issue an approval letter. An approval letter authorizes commercial marketing of the drug with specific prescribing information for specific indications in an approved label. If the FDA's evaluation of the NDA submission or manufacturing facilities is not favorable, the FDA may refuse to approve the NDA or issue a not approvable letter. The not approvable letter outlines the deficiencies in the submission and often requires additional testing or information in order for the FDA to reconsider the application. Even with submission of this additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval. With limited exceptions, the FDA may withhold approval of an NDA regardless of prior advice it may have provided or commitments it may have made to the sponsor. As a condition of NDA approval, the FDA may require post-approval testing and surveillance to monitor the drug's safety or efficacy and may impose other conditions, including labeling restrictions. Such labeling restrictions can materially impact the potential market and profitability of the drug. Once granted, product approvals can still be withdrawn if compliance with regulatory standards is not maintained or problems are identified following initial marketing.

Once the NDA is approved, a product will be subject to certain post-approval requirements, including requirements for adverse event reporting and submission of periodic reports. Persons responsible for manufacture or distribution are subject to FDA inspections to assess compliance with applicable statutory and regulatory requirements. The Food and Drug Administration Amendments Act of 2007 also provides the FDA enhanced post-marketing authority, including the authority to require post-marketing studies and clinical trials, labeling changes based on new safety information, and compliance with risk evaluations and mitigation strategies approved by the FDA.

Additionally, the FDA also strictly regulates the promotional claims that may be made about drug products. The FDA requires substantiation of any claims of superiority of one product over another including, in many cases, requirements that such claims be proven by adequate and well controlled head-to-head clinical trials. To the extent that market acceptance of the Company's products may depend on their superiority over existing therapies, any restriction imposed by FDA on the Company's ability to advertise or otherwise promote claims of superiority, or requirements to conduct additional expensive clinical trials to provide proof of such claims, could negatively affect the sales of the Company's products and/or its costs.

***Orphan Drug Act***

The Orphan Drug Act provides incentives to manufacturers to develop and market drugs for rare diseases and conditions affecting fewer than 200,000 persons in the US at the time of application for Orphan Drug Designation. The first developer to receive FDA marketing approval for an orphan drug is entitled to a seven year exclusive marketing period in the US for that product. However, a drug that the FDA considers to be clinically superior to, or different from, another approved orphan drug, even though for the same indication, may also obtain approval in the US during the seven year exclusive marketing period. In addition, holders of exclusivity for orphan drugs are expected to assure the availability of sufficient quantities of their orphan drugs to meet the needs of patients. Failure to do so could result in the withdrawal of marketing exclusivity for the drug.

Legislation similar to the Orphan Drug Act has been enacted in other countries outside the US, including the European Union ("EU"). The orphan legislation in the EU is available for therapies addressing chronic debilitating or life threatening conditions that affect five or fewer out of 10,000 persons or are financially not viable to develop. The market exclusivity period is for ten years, although that period can be reduced to six years if, at the end of the fifth year, available evidence establishes that the product is sufficiently profitable not to justify maintenance of market exclusivity. The market exclusivity may be extended to 12 years if sponsors complete a pediatric investigation plan agreed upon with the relevant committee of the EMA.

***Pediatric Information***

Under the Pediatric Research Equity Act of 2007 ("PREA"), NDAs or BLAs or supplements to NDAs or BLAs must contain data to assess the safety and effectiveness of the drug for the claimed indication(s) in all relevant pediatric sub-populations and to support dosing and administration for each pediatric sub-population for which the drug is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers. Unless otherwise required by regulation, PREA does not apply to any drug for an indication for which orphan drug designation has been granted. The Best Pharmaceuticals for Children Act ("BPCA"), provides sponsors of NDAs with an additional six month period of market exclusivity for all unexpired patent or non-patent exclusivity on all forms of the drug containing the active moiety if the sponsor submits results of pediatric studies specifically requested by the FDA under BPCA within required timeframes. The Biologics Price Competition and Innovation Act provides sponsors of BLAs an additional six month extension for all unexpired non-patent market exclusivity on all forms of the biologic containing the active moiety pursuant to the BPCA if the conditions under the BPCA are met.

**Foreign Regulation**

In addition to regulations in the US, we are subject to a variety of foreign regulatory requirements governing human clinical trials and marketing approval for drugs. The foreign regulatory approval process includes all of the risks associated with FDA approval set forth above, as well as additional country specific regulations. 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.

**Environmental Regulation**

In addition to being subject to extensive regulation by the FDA, the Company must also comply with environmental regulation insofar as such regulation applies to the Company or its drug candidates. Our costs of compliance with environmental regulation as applied to similar pharmaceutical companies are minimal, since we do not currently, nor do we intend to, engage in the production of any of our drug candidates. The Company currently uses unaffiliated manufacturers to produce all of its drug candidate material and receive final material from such manufacturer, without any involvement on our part in the manufacturing process at any stage of the process.

Although we believe that our safety procedures for using, handling, storing and disposing of our product candidate materials comply with the environmental standards required by state and federal laws and regulations, we cannot completely eliminate the risk of accidental contamination or injury from these materials. We do not carry a specific insurance policy to mitigate this risk to us or to the environment.

**Employees**

At April 10, 2015 the Company employed seven full time persons and one part time person. The Company is not a party to any collective bargaining agreement with its employees; nor are any of its employees a member of any labor unions. The Company is subject to certain statutory and contractual obligations in instances where it terminates UK based employees. These obligations, which are ordinary and customary in the UK, generally range from one to six months wages for terminated employees and would not be expected to represent a material adverse effect to the Company.

**Competition**

We are engaged in a rapidly evolving field. If our drug candidate development reaches the level of commercialization and marketing, we expect to compete primarily with established pharmaceutical companies such as Amgen Inc., Bristol-Myers Squibb Company, F. Hoffmann-La Roche Ltd, Nektar Therapeutics and others. We also expect to compete with established pharmaceutical companies as well as academic institutions and other smaller pharmaceutical companies during the drug development stage of our progress. Competition is intense and expected to increase.

The large and rapidly growing market for new drug therapies for use in humans is likely to attract new entrants. Numerous biotechnology and pharmaceutical companies are focused on developing new drug therapies and many of these companies have greater financial and other resources and development capabilities than we do. Our competitors also have greater collective experience in undertaking pre-clinical and clinical testing of products, obtaining regulatory approvals and manufacturing and marketing prescription pharmaceutical products. Accordingly, certain of these competitors may succeed in obtaining approval for drug products and therapies more rapidly than us.

In addition to competing with universities and other research institutions in the development of drug products, therapies, technologies and processes, we may compete with other companies in acquiring rights to products or technologies from universities. There can be no assurance that our products or product candidates will be more effective or achieve greater market acceptance than competitive products, or that these companies will not succeed in developing products and technologies that are more effective than those being developed for us or that would render our products and technologies less competitive or obsolete.

**Available Information**

Our website address is www.xeneticbio.com. The information in, or that can be accessed through, our website is not part of this Annual Report on Form 10-K. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and amendments to those reports are available, free of charge, on or through our website as soon as practicable after we electronically file such forms, or furnish them to, the SEC. The public may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Information on the operations of the Public Reference Room can be obtained by calling 1-800-SEC-0330. The SEC maintains an internet site that contains reports, proxy and information statements and other information regarding our filings at www.sec.gov.

**Directors and Executive Officers**

Set forth below is the name, age, position and brief account of the business experience of each of our executive officers and directors as of April 10, 2015:

| Name | Age | Position |
|---|---|---|
| Michael Scott Maguire | 51 | President, Chief Executive Officer and Director |
| Colin W. Hill | 69 | Secretary, Treasurer, Chief Financial Officer and Director |
| Firdaus Jal Dastoor FCS | 62 | Director |
| Artur Isaev | 44 | Director |
| Roman Knyazev | 34 | Director |
| Mark Leuchtenberger | 58 | Chairman of the Board |
| Dr. Timothy R. Coté | 54 | Director |
| Darlene Deptula-Hicks | 57 | Director |

***Michael Scott Maguire***

Mr. Maguire has been President, Chief Executive Officer and Director of the Company since January 2014 having been appointed pursuant to terms included in the Company's acquisition of Xenetic UK. Mr. Maguire served with Xenetic UK as its Chief Executive Officer from April 2004 to the present. His background is in life science and healthcare investment banking and he has advised many US and European companies on capital raisings and commercial development over his 26 year career. Mr. Maguire began his banking career with Merrill Lynch in 1987 in New York, and after receiving his MBA from the Babson Graduate School in 1993, he joined the healthcare division of W.R. Grace National Medical Care ("NMC") where he helped develop the international healthcare division. During his time in charge of international business development, he helped double NMC's international revenues through Mergers and Acquisitions. In 1996 he co-founded the Arthur Andersen global healthcare corporate finance practice based in London, a practice that he built to include a staff of 36 across the US and Europe, elevating to the role of managing director. Mr. Maguire is currently a director of Healthcare Capital Partners Limited, a healthcare corporate finance and proprietary investment boutique he co-founded in 2002 and a non-executive director of Renal Services (UK) Limited, a company focused on dialysis service provision in the UK. Based on Mr. Maguire's experience within the biotechnology sector and his executive experience, specifically his experience as an executive officer at other companies, as well as his service on other boards of directors, the Board believes Mr. Maguire has the appropriate set of skills to serve as a member of our Board.

***Colin W. Hill***

Mr. Hill has been Secretary, Treasurer, Chief Financial Officer and Director of the Company since January 2014 having been appointed pursuant to terms included in the Company's acquisition of Xenetic UK. Mr. Hill served as Chief Financial Officer of Xenetic UK from June 2007 to the present. Prior to joining Xenetic UK, he was Finance Director from 2001 to 2003 and non-executive Chairman from 2003 to 2006 of Greenchip Investments plc. Mr. Hill has been a member of the Chartered Institute of Management Accountants since 1968 and spent 15 years in industry specializing in corporate turnaround and development work before becoming a freelance consultant in 1981. Since that time, he has focused on due diligence relating to corporate finance assignments in small and medium enterprises and public companies with small market capitalizations in the UK, US, and overseas. Between 1998 and 2008 Mr. Hill was Group Finance Director of Arlington Group plc, a company listed on the London Alternative Investments Market ("AIM") stock exchange. Based upon Mr. Hill's extensive financial experience, including his experience working with quoted companies on AIM and participation on other boards of directors, the Board believes that Mr. Hill has the appropriate set of skills to serve as a member of our Board.

***Firdaus Jal Dastoor, FCS***

Mr. Dastoor was appointed as a Director of the Company in January 2014 pursuant to terms included in the Company's acquisition of Xenetic UK. Mr. Dastoor was appointed non-executive Director of Xenetic UK in July 2007. He has been a Fellow Member of The Institute of Company Secretaries of India since 2008 and began his career as a company secretary. He was Company Secretary of the Poonawalla Group until 1994. He then took on assignments involved in business development strategies and operations. Mr. Dastoor is on the board of several companies operating in the field of engineering products, life sciences and biotech, international trade, financial services and quality standards certifications. Currently, he is a Group Director of the Poonawalla Group of Companies in charge of Finance and Corporate Affairs. Based on Mr. Dastoor's experience in the field of life sciences and biotechnology, finance and business development, the Board believes Mr. Dastoor has the appropriate set of skills to serve as a member of our Board.

***Artur Isaev***

Mr. Isaev was appointed as a Director of the Company in January 2014 pursuant to terms included in the Company's acquisition of Xenetic UK. Mr. Isaev has been a General Director and a majority shareholder of Human Stem Cells Institute OJSC Russia's public biotech company, headquartered in Moscow. Mr. Isaev has a degree in Medicine and an MBA. He started his business career as a top manager in brokerage, investment and auditing companies. In 2003 he founded Human Stem Cells Institute and from the very beginning has occupied the post of its General Director. Mr. Isaev is a vice president of a non-governmental organization of experts in cell technologies and regenerative medicine. Based on Mr. Isaev's medical education and his experience in clinical stage biotechnology companies, the Board believes Mr. Isaev has the appropriate set of skills to serve as a member of our Board.

***Roman Knyazev***

Mr. Knyazev was appointed to the Board of Directors of the Company in April 2014. Mr. Knyazev has been a Senior Investment Manager for Rusnano Moscow since 2009 and is currently on the board of several biotechnology companies. In his current role, he provides technical expertise, asset valuation, financial modelling and business valuation as well as develops and presents investment strategies and project financing to clients. In 2003, he began his career as Chief Financial Officer of Biotec Pharma Moscow where he gained experience in both the financial and management sector. Mr. Knyazev led the development and implementation of management accounting and budgeting processes as well facilitated internal audits of regional branches. Based on Mr. Knyazev's experience in clinical stage biotechnology companies, the Board believes Mr. Knyazev has the appropriate set of skills to serve as a member of our Board.

***Mark Leuchtenberger***

Mr. Leuchtenberger was appointed to the Board of Directors of the Company in April 2014. Mr. Leuchtenberger joined Chiasma, Inc., a privately held pharmaceutical company based in Newton, Massachusetts, as the Chief Executive Officer in 2015. Prior to that, Mr. Leuchtenberger joined Acusphere, Inc. as President and Chief Executive Officer in 2013, bringing experience in commercial operations, business development and preparing biopharmaceutical companies for product approval and commercialization. Mr. Leuchtenberger most recently served as President, Chief Executive Officer and a member of the board of directors at Rib-X Pharmaceuticals (now Melinta) until its acquisition. Prior to Rib-X, Mr. Leuchtenberger served as President and Chief Executive Officer of Targanta Therapeutics Corporation, where he led the company's initial public offering in 2007 and its acquisition in 2009. From 2006 to 2009 Mr. Leuchtenberger served as the President and Chief Executive Officer of Therion Biologics Corporation, a privately held cancer vaccine company. Mr. Leuchtenberger received his M.B.A. from the Yale School of Management and his B.A. from Wake Forest University. He is a director and past chairman of the Massachusetts Biotechnology Council Board of Directors and currently serves as a trustee for Beth Israel Deaconess Medical Center and Chairman of the Advisory Committee for the MassDevelopment Emerging Technology Fund. Based on Mr. Leuchtenberger's experience in multiple biotechnology companies, the Board believes Mr. Leuchtenberger has the appropriate set of skills to serve as a member of our Board.

***Dr. Timothy R. Coté***

Dr. Coté was appointed to the Board of Directors of the Company in February 2014. Dr. Coté is a leading national regulatory expert in orphan drug development. Mr. Coté has 22 years of federal service at the FDA, the National Institute of Health, and the Center for Disease Control. Most recently, Dr. Coté served as the Director of the FDA Office of Orphan Products Development from 2007 to 2011. Dr. Coté was instrumental in implementing the Orphan Drug Act and personally signed more than 800 orphan drug designations. Since leaving his position with the FDA in 2011 to the present, Dr. Coté has been engaged as Chief Executive Officer and Principal of Coté Orphan Consulting, LLC, a regulatory affairs advisory firm based in Silver Spring, Maryland, that provides valuable strategic planning and execution services to companies developing or seeking to develop orphan products. Based on his extensive experience in FDA matters, including with the FDA's Orphan Products Development Program, the Board believes that Dr. Coté has the appropriate set of skills to serve as a member of our Board.

***Darlene Deptula-Hicks***

Ms. Deptula-Hicks was appointed to the Board of Directors of the Company in April 2014. Ms. Deptula-Hicks is a strategic senior financial executive with extensive experience in both public and private companies, including experience in fund raising, mergers and acquisitions, public and private offerings and with operational management focused in life sciences. Since November 2014, Ms. Deptula-Hicks is the Acting Chief Financial Officer of Pieris Pharmaceuticals, Inc. (OTCQB:PIRS) pursuant to a consulting agreement with the financial advisory firm of Danforth Advisors, LLC. Prior to that and since June 2012, Ms. Deptula-Hicks served as Vice President and Chief Financial Officer of Microline Surgical, Inc. From 2006 to 2011, Ms. Deptula-Hicks was the Vice President, Chief Financial Officer, Treasurer and Secretary of ICAD, Inc. She received her Bachelor of Science in Accounting from Southern New Hampshire University and her MBA from Rivier College. Based upon her extensive financial experience including experience in fund raising, mergers, public companies and life sciences, the Board believes Ms. Deptula-Hicks has the appropriate set of skills to serve as a member of our Board.

## ITEM 1A – RISK FACTORS

*An investment in shares of our common stock involves a high degree of risk. You should carefully consider the following information about these risks, together with the other information appearing elsewhere in this Annual Report on Form 10-K, including our consolidated financial statements and related notes hereto, before deciding to invest in our common stock. The occurrence of any of the following risks could have a material adverse effect on our business, financial condition, results of operations and future growth prospects. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment.*

### Risks related to our financial condition and capital requirements

***We have never been profitable and may never achieve or sustain profitability.***

We do not have any significant revenues, we have never been profitable and we may not achieve profitability in the foreseeable future, if at all. Our ability to generate profits in the future will depend on a number of factors, including:

- Funding the costs relating to the research and development, regulatory approval, commercialization and sale and marketing of our drug candidates;
- Market acceptance of our drug candidates;
- Costs of acquiring and developing new drug candidates;
- Ability to bring our drug candidates to market;
- General and administrative costs relating to our operations;
- Increases in our research and development costs;
- Charges related to purchases of technology or other assets; and
- Our ability to raise additional capital.

As of December 31, 2014, we had an accumulated deficit of approximately $76 million. We expect to incur additional operating losses as we expand our research and development activities and our commercialization, marketing and sales efforts. If we are unable to generate sufficient revenue from our operations to pay expenses or we are unable to obtain additional financing on commercially reasonable terms, our business, financial condition and results of operations may be materially and adversely affected.

***We have insufficient cash flow to fund our operations beyond the end of April 2015 which raises substantial doubt about our ability to continue as a going concern beyond that date.***

Our total current assets, cash and working capital were approximately $2.8, $2.5 and $0.1 million, respectively at December 31, 2014. We estimate that we have enough cash on hand to fund our base business plan through the end of April 2015. We will need to raise additional working capital either through equity or debt or a combination of equity and debt during 2014 should we decide to accelerate the timing of certain research and development programs versus our base business plan.

Our recurring operating losses, past liquidity issues and indebtedness raise substantial doubt about our ability to continue as a going concern beyond the end of April 2015. Our ability to continue as a going concern and the appropriateness of using the going concern basis of accounting depends upon, among other things, our ability to generate sufficient cash from operations and financing sources to meet our obligations. There can be no assurance that we will be able to generate positive cash flows from operations. Further, there can be no assurance that we will be able to obtain additional financing or that, even if we do obtain additional financing, it will be on terms that allow us to continue to fund our current business plan.

Concern about our ability to fund our base business plan beyond the end of April 2015 could adversely affect our ability to attract and retain key employees and to attract and retain key collaboration partners that could adversely affect our business and adversely impact the price of our stock. Our ability to meet future obligations will be dependent upon our future performance, which will be subject to financial, business and other factors affecting our operations, many of which are beyond our control.

***From time to time, we will need to raise additional funding, 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 are currently advancing our product candidates through preclinical or clinical development. Developing these product candidates is expensive, and our research and development expenses may increase substantially in connection with our ongoing activities.

As a result, from time to time, we may need to seek additional funds, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements or a combination of these approaches. Raising funds in the current economic environment may present additional challenges. Even if we believe we have sufficient funds for our current or future operating plans, we may seek additional capital if market conditions are favorable or if we have specific strategic considerations.

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. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. Moreover, the terms of any financing may adversely affect the holdings or the rights of our stockholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our shares to decline. The sale of additional equity or convertible securities would dilute all of our stockholders. The incurrence of indebtedness would result in increased fixed payment obligations and we may be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborative partners or otherwise at an earlier stage than otherwise would be desirable and we may be required to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects.

If we are unable to obtain funding on a timely basis, we may be required to significantly curtail, delay or discontinue one or more of our research or development programs or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, financial condition and results of operations.

**Risks related to the discovery and development of our product candidates**

***We are an established operating company in the business of developing biologic drug products. However, given the uncertainty of such development our business operations may never fully materialize and create value for investors.***

We are a company focused on the development for commercialization, marketing and selling of pharmaceutical products. Our PolyXen®, OncoHist™ and ImuXen® drug candidates are in the early stages of the regulatory new drug approval process. Our revenues to date consist primarily of collaboration revenue from a single partner and not from product sales or royalties. We have not yet recognized significant revenue. You should evaluate the likelihood of financial and operational success in light of the uncertainties and complexities present in an early stage company, many of which are beyond our control, including:

- Our potential inability to achieve regulatory approval of our drug candidates;
- The significant investment of capital and other resources necessary to achieve regulatory approval of our drug candidates; and
- Our potential inability to enter into a successful marketing and distribution collaboration or to successfully commercialize, market and sell our drug candidates when approved, if ever, on our own.

Our operations have been limited to organizing and staffing our company and early stage work in the development and regulatory process to allow clinical trials on our drug candidates. These operations provide a limited basis for you to assess our ability to commercialize our drug candidates and the advisability of investing in us.

***Our failure to comply with extensive government regulation may significantly affect our operating results.***

Our products are subject to extensive regulation by the FDA, as well as other federal, state, local and foreign government laws and regulations. These regulations may affect many aspects of our operations, including testing, research and development, manufacturing, pre-market approval, storage, quality control, adverse event reporting, record keeping, product labeling, marketing, advertising and promotion. Failure to comply with applicable regulatory requirements could, among other things, result in:

- Fines;
- Changes to advertising or claims made;
- Failure to obtain necessary marketing approvals;
- Revocation or suspension of regulatory approvals of products;
- Regulatory letters;
- Adverse publicity;
- Product seizures or recall;
- Delay, interruption or suspension of product manufacturing;
- Suspension of distribution, marketing and sale;
- Mandated corrective action; and
- Civil or criminal sanctions.

The discovery of previously unknown problems with our initial and future products may result in other significant unexpected negative or adverse impact to our operations.

***We may find it difficult to enroll patients in our clinical studies, which could delay or prevent clinical studies of our product candidates.***

Identifying and qualifying patients to participate in clinical studies of our product candidates is critical to our success. The timing of our clinical studies depends on the speed at which we can recruit patients to participate in testing our product candidates. We may experience delays. If patients are unwilling to participate in our clinical studies because of negative publicity from adverse events in the biopharmaceutical industries or for other reasons, including competitive clinical studies for similar patient populations, the timeline for recruiting patients, conducting studies and obtaining regulatory approval of potential products may be delayed. These delays could result in increased costs, delays in advancing our product development, delays in testing the effectiveness of our technology or termination of the clinical studies altogether.

We may not be able to identify, recruit and enroll a sufficient number of patients, or those with required or desired characteristics to achieve diversity in a study, to complete our clinical studies in a timely manner. Patient enrollment is affected by factors including:

- Severity of the disease under investigation;
- Design of the study protocol;
- Size of the patient population;
- Eligibility criteria for the study in question;
- Perceived risks and benefits of the product candidate under study;
- Proximity and availability of clinical study sites for prospective patients;
- Availability of competing products and clinical studies;
- Efforts to facilitate timely enrollment in clinical studies;
- Patient referral practices of physicians; and
- Ability to monitor patients adequately during and after treatment.

We may not be able to initiate or continue clinical studies if we cannot enroll a sufficient number of eligible patients to participate in the clinical studies required by the FDA or other regulatory agencies. Our ability to successfully initiate, enroll and complete a clinical study in any foreign country is subject to numerous risks unique to conducting business in foreign countries, including:

- Difficulty in establishing or managing relationships with contract research organizations, and physicians;
- Different standards for the conduct of clinical studies;
- Our inability to locate qualified local consultants, physicians and partners; and
- The potential burden of complying with a variety of foreign laws, medical standards and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatment.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical studies as planned, we may need to delay, limit or terminate ongoing or planned clinical studies, any of which would have an adverse effect on our business.

***We may encounter substantial delays in our clinical studies.***

Clinical testing is expensive, time-consuming and uncertain as to outcome. We cannot guarantee that any clinical studies will be conducted as planned or completed on schedule, if at all. A failure of one or more clinical studies can occur at any stage of testing. Events that may prevent successful or timely completion of clinical development include:

- Delays in reaching a consensus with regulatory agencies on study design;
- Delays in reaching agreement on acceptable terms with prospective CROs and clinical study sites;
- Delays in obtaining required Institutional Review Board, or Institutional Ethics Committee approval at each clinical study site;
- Delays in recruiting suitable patients to participate in our clinical studies;
- Imposition of a clinical hold by regulatory agencies, after an inspection of our clinical study operations or study sites;
- Failure by our CROs, other third parties or us to adhere to clinical study requirements;
- Failure to perform in accordance with the FDA's good clinical practices ("GCP"), or applicable regulatory requirements in other countries;
- Delays in the testing, validation, manufacturing and delivery of our product candidates to the clinical sites;
- Delays in having patients complete participation in a study or return for post-treatment follow-up;
- Clinical study sites or patients dropping out of a study;
- Occurrence of serious adverse events associated with the product candidate that are viewed to outweigh its potential benefits;
- Changes in regulatory requirements and guidance that require amending or submitting new clinical protocols; or
- Delays related to insufficient working capital.

Any inability to successfully complete preclinical and clinical development could result in additional costs to us or impair our ability to generate revenues. In addition, if we make manufacturing or formulation changes to our product candidates, we may need to conduct additional studies to bridge our modified product candidates to earlier versions.

If the results of our clinical studies are inconclusive or if there are safety concerns or adverse events associated with our product candidates, we may:

- Be delayed in obtaining marketing approval for our product candidates, if at all;
- Obtain approval for indications or patient populations that are not as broad as intended or desired;
- Obtain approval with labeling that includes significant use or distribution restrictions or safety warnings;
- Be subject to changes with the way the product is administered;
- Be required to perform additional clinical studies to support approval or be subject to additional post-marketing testing requirements;
- Have regulatory authorities withdraw their approval of the product or impose restrictions on its distribution in the form of a modified risk evaluation and mitigation strategy;
- Be subject to the addition of labeling statements, such as warnings or contraindications;
- Be sued; or
- Experience damage to our reputation.

As described above, any of these events could prevent us from achieving or maintaining market acceptance of our product candidates and impair our ability to generate revenues.

***Clinical trials may fail to demonstrate the safety and efficacy of our product candidates and could prevent or significantly delay regulatory approval.***

Before receiving NDA approval to commercialize a drug candidate, we must demonstrate to the FDA, with substantial evidence from well controlled clinical trials, that the drug candidate is both safe and effective. If these trials or future clinical trials are unsuccessful, our business and reputation would be harmed and our stock price would most likely be adversely affected.

All of our drug candidates are prone to the risks of failure. The results of early stage clinical trials of our drug candidates will not necessarily predict the results of later stage clinical trials. Drug candidates in later stage clinical trials may fail to show desired safety and efficacy traits, despite having progressed through initial clinical testing. Even if we believe the data collected from clinical trials of our drug candidates are promising, these data may not be sufficient to obtain approval from the FDA or other regulators. Pre-clinical and clinical data can be interpreted in different ways. Accordingly, FDA or other regulatory officials could interpret such data in different ways than we do which could delay, limit or prevent regulatory approval. The FDA, other regulatory authorities, or we may suspend or terminate clinical trials at any time. Any failure or significant delay in completing clinical trials for our drug candidates, or in receiving regulatory approval for the sale of resulting products, may severely harm our business and reputation.

Because of these risks, the research and development efforts of our collaborative partners may not result in any commercially viable products. If a significant portion of these development efforts is not successfully completed or, if required regulatory approvals are not obtained by our partners, or any approved products are not commercially successful, we are not likely to generate significant revenues or become profitable.

***Even if we complete the necessary preclinical and clinical studies, we cannot predict when or if we will obtain regulatory approval to commercialize a product candidate or the approval may be for a more narrow indication than we expect.***

A product cannot be commercialized until the appropriate regulatory authorities have reviewed and approved the product candidate. Even if our product candidates demonstrate safety and efficacy in clinical studies, the regulatory agencies may not complete their review processes in a timely manner, or we may not be able to obtain regulatory approval. Additional delays may result if an FDA Advisory Committee or other regulatory advisory group or authority recommends non-approval or restrictions on approval. In addition, we may experience delays or rejections based upon additional government regulation from future legislation or administrative action, or changes in regulatory agency policy during the period of product development, clinical studies and the review process. Regulatory agencies also may approve a product candidate for fewer or more limited indications than requested or may grant approval subject to the performance of post-marketing studies. In addition, regulatory agencies may not approve the labeling claims that are necessary or desirable for the successful commercialization of our product candidates.

***Even if we obtain regulatory approval for a product candidate, our products will remain subject to regulatory scrutiny.***

Even if we obtain regulatory approval in a jurisdiction, the regulatory authority may still impose significant restrictions on the indicated uses or marketing of our product candidates, or impose ongoing requirements for potentially costly post-approval studies or post-market surveillance. Additionally, the holder of an approved BLA is obligated to monitor and report adverse events and any failure of a product to meet the specifications in the BLA. The holder of an approved BLA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling or manufacturing process. Advertising and promotional materials must comply with FDA rules and are subject to FDA review, in addition to other potentially applicable federal and state laws.

In addition, product manufacturers and their facilities are subject to payment of user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP, and adherence to commitments made in the BLA. If we or a regulatory agency discovers previously unknown problems with a product such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, a regulatory agency may impose restrictions relative to that product or the manufacturing facility, including requiring recall or withdrawal of the product from the market or suspension of manufacturing.

If we fail to comply with applicable regulatory requirements following approval of any of our product candidates, a regulatory agency may:

- Issue a warning letter asserting that we are in violation of the law;
- Seek an injunction or impose civil or criminal penalties or monetary fines;
- Suspend or withdraw regulatory approval;
- Suspend any ongoing clinical studies;
- Refuse to approve a pending marketing application, such as a BLA or supplements to a BLA submitted by us;
- Seize product; or
- Refuse to allow us to enter into supply contracts, including government contracts.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit our ability to commercialize our product candidates and generate revenues.

***The commercial success of any current or future product candidate will depend upon the degree of market acceptance by physicians, patients, third-party payors and others in the medical community.***

Even with the requisite approvals, the commercial success of our product candidates will depend in part on the medical community, patients, and third-party payors accepting our product candidates as medically useful, cost-effective, and safe. Any product that we or our partners bring to the market may not gain market acceptance by physicians, patients, third-party payors and others in the medical community. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenue and may not become profitable. The degree of market acceptance of these product candidates, if approved for commercial sale, will depend on a number of factors, including:

- The potential efficacy and potential advantages over alternative treatments;
- The prevalence and severity of any side effects, including any limitations or warnings contained in a product's approved labeling;
- Relative convenience and ease of administration;
- The willingness of the target patient population to try new products and of physicians to prescribe these products;
- The strength of marketing and distribution support and timing of market introduction of competitive products;
- Publicity concerning our products or competing products and treatments; and
- Sufficient third-party insurance coverage or reimbursement.

Even if a potential product displays a favorable efficacy and safety profile in preclinical and clinical studies, market acceptance of the product will not be known until after it is launched. Our efforts to educate the medical community and third-party payors on the benefits of the product candidates may require significant resources and may never be successful.

***The commercial potential of a drug candidate in development is difficult to predict. If the market size for a new drug is significantly smaller than we anticipate, it could significantly and negatively impact our revenue, results of operations and financial condition.***

It is very difficult to estimate the commercial potential of product candidates due to important factors such as safety and efficacy compared to other available treatments, including potential generic drug alternatives with similar efficacy profiles, changing standards of care, third party payer reimbursement standards, patient and physician preferences, the availability of competitive alternatives that may emerge either during the long drug development process or after commercial introduction, and the availability of generic versions of our successful product candidates following approval by government health authorities based on the expiration of regulatory exclusivity or our inability to prevent generic versions from coming to market by asserting our patents. If due to these factors, or others, the market potential for a drug candidate is lower than we anticipated, it could significantly and negatively impact the commercial terms of any collaboration partnership potential for such drug candidate or, if we have already entered into a collaboration for such drug candidate, the revenue potential from royalty and milestone payments could be significantly diminished which would negatively impact our business, financial condition and results of operations.

**Risks related to our reliance on third parties**

***Because we depend on Serum Institute and other third parties to develop our drug candidates and to manufacture our material, we could be affected adversely if any of them fail to provide us with sufficient product quantities at acceptable prices.***

We have no manufacturing capability. As a result, we depend on Serum Institute, which in turn may rely upon third parties to manufacture our products. Although our strategy is based on leveraging the ability of collaboration partners to develop and manufacture our products for commercialization in the pharmaceutical marketplace, we will be dependent on collaborations with drug development and manufacturing collaborators. If we are not able to maintain existing collaborative arrangements or establish new arrangements on commercially acceptable terms, we would be required to undertake product manufacturing and development activities at our own expense. This would increase our capital requirements or require us to limit the scope of our development activities. Moreover, we have limited or no experience in conducting full scale bioequivalence or other clinical studies, preparing and submitting regulatory applications, and manufacturing and marketing drug products and as such we are reliant on contract parties for such efforts. There can be no assurance that we will be successful in performing these activities and any failure to perform such activities could have a material adverse effect on our business, financial condition and results of our operations.

If any of our developmental collaborators breach or terminate their agreements with us or otherwise fail to conduct their collaborative activities in a timely manner, the pre-clinical and/or clinical development and/or commercialization of our product candidates will be delayed and we would be required to devote additional resources to product development and commercialization or terminate certain development programs. Also, a license relationship may be terminated at the discretion of our collaborator, or at the end of contract terms, in some cases with only limited notice to us. The termination of the collaborative arrangement could have a material adverse effect on our business, financial condition and results of operations. There also can be no assurance that disputes will not arise with respect to the ownership of rights to any technology developed with third parties. These and other possible disagreements with collaborators could lead to delays in the development or commercialization of our product candidates or could result in litigation or arbitration, which could be time consuming and expensive and could have a material adverse effect on our business, financial condition and results of operations.

***We and our contract manufacturers are subject to significant regulation with respect to manufacturing our products. The manufacturing facilities on which we rely may not continue to meet regulatory requirements and have limited capacity.***

We currently have relationships with a limited number of suppliers for the manufacturing of our product candidates. Each supplier may require licenses to manufacture such components if such processes are not owned by the supplier or in the public domain and we may be unable to transfer or sublicense the intellectual property rights we may have with respect to such activities.

All entities involved in the preparation of pharmaceutical products for clinical studies or commercial sale, including our existing contract manufacturers for our product candidates, are subject to extensive regulation. Components of a finished pharmaceutical product approved for commercial sale or used in late-stage clinical studies must be manufactured in accordance with cGMP. These regulations govern manufacturing processes and procedures (including record keeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of adventitious agents or other contaminants, or to inadvertent changes in the properties or stability of our product candidates that may not be detectable in final product testing. We or our contract manufacturers must supply all necessary documentation in support of a BLA on a timely basis and must adhere to the FDA's good laboratory practices ("GLP"), and cGMP regulations enforced by the FDA through its facilities inspection program. Our facilities and quality systems and the facilities and quality systems of some or all of our third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our product candidates or any of our other potential products. In addition, the regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our product candidates or our other potential products or the associated quality systems for compliance with the regulations applicable to the activities being conducted. If these facilities do not pass a pre-approval plant inspection, FDA approval of the products will not be granted.

The regulatory authorities also may, at any time following approval of a product for sale, audit the manufacturing facilities of our third-party contractors. If any such inspection or audit identifies a failure to comply with applicable regulations or if a violation of our product specifications or applicable regulations occurs independent of such an inspection or audit, we or the relevant regulatory authority may require remedial measures that may be costly and/or time-consuming for us or a third party to implement and that may include the temporary or permanent suspension of a clinical study or commercial sales or the temporary or permanent closure of a facility. Any such remedial measures imposed upon us or third parties with whom we contract could materially harm our business.

If we or any of our third-party manufacturers fail to maintain regulatory compliance, the FDA can impose regulatory sanctions including, among other things, refusal to approve a pending application for a biologic product, or revocation of a pre-existing approval. As a result, our business, financial condition and results of operations may be materially harmed.

Additionally, if supply from one approved manufacturer is interrupted, there could be a significant disruption in commercial supply. The number of manufacturers with the necessary manufacturing capabilities is limited. In addition, an alternative manufacturer would need to be qualified through a BLA supplement which could result in further delay. The regulatory agencies may also require additional studies if a new manufacturer is relied upon for commercial production. Switching manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines.

These factors could cause the delay of clinical studies, regulatory submissions, required approvals or commercialization of our product candidates, cause us to incur higher costs and prevent us from commercializing our products successfully. Furthermore, if our suppliers fail to meet contractual requirements, and we are unable to secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical studies may be delayed or we could lose potential revenue.

***We expect to rely on third parties to conduct, supervise and monitor our clinical studies, and if these third parties perform in an unsatisfactory manner, it may harm our business.***

We expect to rely on CROs and clinical study sites to ensure our clinical studies are conducted properly and on time. While we will have agreements governing their activities, we will have limited influence over their actual performance. We will control only certain aspects of our CROs' activities. Nevertheless, we will be responsible for ensuring that each of our clinical studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on the CROs does not relieve us of our regulatory responsibilities.

We and our CROs are required to comply with the FDA's GCPs for conducting, recording and reporting the results of clinical studies to assure that the data and reported results are credible and accurate and that the rights, integrity and confidentiality of clinical study participants are protected. The FDA enforces these GCPs through periodic inspections of study sponsors, principal investigators and clinical study sites. If we or our CROs fail to comply with applicable GCPs, the clinical data generated in our future clinical studies may be deemed unreliable and the FDA may require us to perform additional clinical studies before approving any marketing applications. Upon inspection, the FDA may determine that our clinical studies did not comply with GCPs. In addition, our future clinical studies will require a sufficient number of test subjects to evaluate the safety and efficacy of our product candidates. Accordingly, if our CROs fail to comply with these regulations or fail to recruit a sufficient number of patients, we may be required to repeat such clinical studies, which would delay the regulatory approval process.

Our CROs are not our employees, and we are therefore unable to directly monitor whether or not they devote sufficient time and resources to our clinical and nonclinical programs, which must be conducted in accordance with GCPs and GLPs, respectively. These CROs may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical studies or other drug development activities that could harm our competitive position. If our CROs do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements, or for any other reasons, our clinical studies may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize our product candidates. As a result, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

We may also rely on other third parties to store and distribute our products for any clinical studies that we may conduct. Any performance failure on the part of our distributors could delay clinical development or marketing approval of our product candidates or commercialization of our products, if approved, producing additional losses and depriving us of potential product revenue.

***Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.***

Because we rely on third parties to manufacture our product candidates, and because we collaborate with various organizations and academic institutions on the development of our product candidates, we must, at times, share trade secrets with them. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, collaborative research agreements, consulting agreements or other similar agreements with our collaborators, advisors, employees and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, such as trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have a material adverse effect on our business.

In addition, these agreements typically restrict the ability of our collaborators, advisors, employees and consultants to publish data potentially relating to our trade secrets. Our academic collaborators typically have rights to publish data, provided that we are notified in advance and may delay publication for a specified time in order to secure our intellectual property rights arising from the collaboration. In other cases, publication rights are controlled exclusively by us, although in some cases we may share these rights with other parties. We may also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of these agreements, independent development or publication of information including our trade secrets in cases where we do not have proprietary or otherwise protected rights at the time of publication. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

**Risks related to our intellectual property**

***If we fail to adequately protect or enforce our IP rights, we may be unable to operate effectively.***

Our success and ability to compete are substantially dependent on our patents, proprietary formulations and trademarks. Although we believe that the patents and associated trademarks and licenses are valid, there can be no assurance that they will not be challenged and subsequently invalidated and/or canceled. The invalidation or cancellation of any one or all of the patents or trademarks would significantly damage our commercial prospects.

Further, we may find it necessary to legally challenge parties infringing our patents or trademarks or licensed trademarks to enforce our rights thereto. There can be no assurance that any of the patents would ultimately be held valid or that efforts to defend any of the patents, trade secrets, know-how or other IP rights would be successful.

***If any of our pending patent applications do not issue or are deemed invalid following issuance, we may lose valuable IP protection.***

The patent positions of pharmaceutical and biotechnology companies, such as ours, are uncertain and involve complex legal and factual issues. We own numerous US and foreign patents and a number of pending patent applications that cover various aspects of our technologies. There can be no assurance that patents that have issued will be held valid and enforceable in a court of law. Even for patents that are held valid and enforceable, the legal process associated with obtaining such a judgment is time consuming and costly. Additionally, issued patents can be subject to opposition or other proceedings that can result in the revocation of the patent or maintenance of the patent in amended form (and potentially in a form that renders the patent without commercially relevant and/or broad coverage). Further, our competitors may be able to circumvent and otherwise design around our patents. Even if a patent is issued and enforceable, because development and commercialization of pharmaceutical products can be subject to substantial delays, patents may expire early and provide only a short period of protection, if any, following the commercialization of a product encompassed by our patents. We may have to participate in interference proceedings declared by the U.S. Patent and Trademark Office, which could result in a loss of the patent and/or substantial cost to us.

We have filed patent applications, and plan to file additional patent applications, covering various aspects of our PSA and advanced polymer conjugate technologies and our proprietary product candidates. There can be no assurance that the patent applications for which we apply would actually be issued as patents, or do so with commercially relevant and/or broad coverage. The coverage claimed in a patent application can be significantly reduced before the patent is issued. The scope of our claim coverage can be critical to our ability to enter into licensing transactions with third parties and our right to receive royalties from our collaboration partnerships. Since publication of discoveries in scientific or patent literature often lags behind the date of such discoveries, we cannot be certain that we were the first inventor of inventions covered by our patents or patent applications. In addition, there is no guarantee that we will be the first to file a patent application directed to an invention.

An adverse outcome in any judicial proceeding involving IP, including patents, could subject us to significant liabilities to third parties, require disputed rights to be licensed from or to third parties or require us to cease using the technology in dispute. In those instances where we seek an IP license from another, we may not be able to obtain the license on a commercially reasonable basis, if at all, thereby raising concerns on our ability to freely commercialize our technologies and/or products.

***If we infringe on the IP rights of others, our business and profitability may be adversely affected.***

Our commercial success will also depend, in part, on us and our collaborative partners not infringing on the patents or proprietary rights of others. There can be no assurance that the technologies and products used or developed by our collaborative partners and marketed and sold by us will not infringe such rights. If such infringement occurs and neither we nor our collaborative partner is able to obtain a license from the relevant third party, we will not be able to continue the development, manufacture, use, or sale of any such infringing technology or product. There can be no assurance that necessary licenses to third party technology will be available at all, or on commercially reasonable terms. In some cases, litigation or other proceedings may be necessary to defend against or assert claims of infringement or to determine the scope and validity of the proprietary rights of third parties. Any potential litigation could result in substantial costs to, and diversion of, our resources and could have a material and adverse impact on us. An adverse outcome in any such litigation or proceeding could subject us to significant liabilities, require us to cease using the subject technology or require us to license the subject technology from the third party, all of which could have a material adverse effect on our business.

***If we fail to comply with our obligations in the agreements under which we license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.***

We are a party to a number of intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, milestone payment, royalty and other obligations on us. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, the licensor may have the right to terminate the license, in which event we would not be able to market products covered by the license.

We may need to obtain licenses from third parties to advance our research, and we have done so from time to time. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, we may be unable to develop the affected product candidates, which could harm our business significantly. We cannot provide any assurances that third-party patents do not exist which might be enforced against our current product candidates or future products, resulting in either an injunction prohibiting the sales, or, with respect to the sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties.

In many cases, patent prosecution of our licensed technology is controlled solely by the licensor. If our licensors fail to obtain and maintain patent or other protection for the proprietary intellectual property we license from them, we could lose our rights to the intellectual property or our exclusivity with respect to those rights, and our competitors could market competing products using the intellectual property. In certain cases, we control the prosecution of patents resulting from licensed technology. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners. Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues and is complicated by the rapid pace of scientific discovery in our industry. Disputes may arise regarding intellectual property subject to a licensing agreement, including:

- The scope of rights granted under the license agreement and other interpretation-related issues;
- The extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- The sublicensing of patent and other rights under our collaborative development relationships;
- Our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- The ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- The priority of invention of patented technology.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates.

***We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time-consuming and unsuccessful.***

Competitors may infringe our patents or the patents of our licensors. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours or our licensors is not valid, is unenforceable and/or is not infringed, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing.

Interference proceedings provoked by third parties or brought by us may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of our licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms. Our defense of litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. We may not be able to prevent, alone or with our licensors, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

***Recent patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.***

On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. The U.S. PTO is currently developing regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first to file provisions, were enacted March 16, 2013. However, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business and financial condition.

***We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties or that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.***

We employ individuals who were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants and independent contractors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of any of our employee's former employer or other third parties. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could adversely impact our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

***We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.***

We may also be subject to claims that former employees, collaborators or other third parties have an ownership interest in our patents or other intellectual property. We may have in the future ownership disputes arising, for example, from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

***Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.***

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the U.S. PTO and various governmental patent agencies outside of the United States in several stages over the lifetime of the patents and/or applications. The U.S. PTO and various non-U.S. governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. Non-compliance may result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market and this circumstance would have a material adverse effect on our business.

***Issued patents covering our product candidates could be found invalid or unenforceable if challenged in court.***

If we or one of our licensing partners initiated legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the U.S. PTO, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post grant review, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover our product candidates. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection would have a material adverse impact on our business.

***Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products.***

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biotechnology industry involve both technological and legal complexity, and is therefore obtaining and enforcing biotechnology patents is costly, time-consuming and inherently uncertain. In addition, the United States has recently enacted and is currently implementing wide-ranging patent reform legislation. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the federal courts, and the U.S. PTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

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

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our inventions in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our products and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

**Risks related to our business operations**

***We operate in an extremely competitive environment and there can be no assurances that competing technologies would not harm our business development.***

We are engaged in a rapidly evolving field. Competition from numerous pharmaceutical companies including Amgen Inc., Bristol-Myers Squibb Company, F. Hoffmann-La Roche Ltd, Nektar Therapeutics and others, as well as research and academic institutions, is intense and expected to increase. The large and rapidly growing market for liposomal drugs and oncology treatments is likely to attract new entrants. Numerous biotechnology and pharmaceutical companies are focused on developing new liposomal drug delivery systems and cancer treatments. Many, if not all, of these companies have greater financial and other resources and development capabilities than we do. Many of our competitors also have greater collective experience in undertaking pre-clinical and clinical testing of products, obtaining regulatory approvals and manufacturing and marketing prescription pharmaceutical products. There can be no assurance that our under development drug candidates will be more effective or achieve greater market acceptance than competitive products, or that our competitors will not succeed in developing products and technologies that are more effective than those being developed by us or that would render our products and technologies less competitive or obsolete. See "*Competition"*.

***Technological advancements by our competitors could result in the obsolescence of some or all of our drug candidates and may harm business development.***

The areas in which we are developing and commercializing our drug candidates involve rapidly developing technology. There can be no assurance that we will be able to establish ourselves in such fields, or, if established, that we will be able to maintain our position. There can be no assurance that the development by others of new or improved drugs will not make our drug candidates superfluous or obsolete.

***We are a party to collaboration agreements and other significant agreements which contain complex commercial terms that could result in disputes, litigation or indemnification liability that could adversely affect our business, results of operations and financial condition.***

We currently derive, and expect to derive in the foreseeable future, all of our revenue from collaboration agreements with biotechnology and pharmaceutical companies. These collaboration agreements contain complex commercial terms, including:

- Clinical development and commercialization obligations that are based on certain commercial reasonableness performance standards that can often be difficult to enforce if disputes arise as to adequacy of our partner's performance;
- Research and development performance and reimbursement obligations for our personnel and other resources allocated to partnered drug candidate development programs;
- Clinical and commercial manufacturing agreements, some of which are priced on an actual cost basis for products supplied by us to our partners with complicated cost allocation formulas and methodologies;
- Clinical development and commercialization obligations that are based on certain commercial reasonableness performance standards that can often be difficult to enforce if disputes arise as to adequacy of our partner's performance;
- Research and development performance and reimbursement obligations for our personnel and other resources allocated to partnered drug candidate development programs;
- Clinical and commercial manufacturing agreements, some of which are priced on an actual cost basis for products supplied by us to our partners with complicated cost allocation formulas and methodologies;
- IP ownership allocation between us and our partners for improvements and new inventions developed during the course of the collaboration;
- Royalties on drug sales based on a number of complex variables, including net sales calculations, geography, scope of patent claim coverage, patent life, generic competitors, bundled pricing and other factors; and
- Indemnity obligations for IP infringement, product liability and certain other claims.

From time to time, we have informal dispute resolution discussions with third parties regarding the appropriate interpretation of the complex commercial terms contained in our agreements. One or more disputes may arise or escalate in the future regarding our collaboration agreements, transaction documents, or third party license agreements that may ultimately result in costly litigation and unfavorable interpretation of contract terms, which would have a material adverse effect on our business, financial condition and results of operations.

***Write-offs related to the impairments of our long-lived assets, including goodwill and indefinite-lived intangible assets, and other non-cash charges such as share-based compensation may adversely impact our results of operations.***

We may incur significant non-cash charges related to impairments of our long-lived assets, including goodwill and indefinite-lived intangible assets. Although we did not record any such charges during 2014, we are required to perform periodic impairment reviews of those assets at least annually. The carrying value of goodwill on our balance sheet that is subject to impairment reviews was approximately $3.5 million and $3.7 million at December 31, 2014 and 2013, respectively, and the carrying value of our indefinite-lived assets was $9.8 million and $10.3 million at December 31, 2014 and 2013, respectively. To the extent future reviews conclude that the expected future cash flows generated from our business activities are not sufficient to recover the carrying value of these assets, we will be required to measure and record an impairment charge to write-down these assets to their realizable values and those impairment charges could be equal to the entire carrying value.

We completed our last review during the fourth quarter of 2014 and determined that goodwill and indefinite-lived intangible assets were not impaired as of December 31, 2014. However, there can be no assurance that upon completion of subsequent reviews a material impairment charge will not be recorded. If future periodic reviews determine that our assets are impaired and a write-down is required, it will adversely impact our operating results.

We recorded non-cash charges of approximately $702,000 and $432,000 for share-based compensation during 2014 and 2013, respectively. In addition, we recorded a non-cash charge of approximately $812,000 in consideration for the performance of services and termination of a prior collaboration agreement between Lipoxen and FDS in exchange for the Company's common stock during 2014. In the future this amount could fluctuate materially as the Company expects to continue to issue share-based compensation awards.

***Potential new accounting pronouncements or legislative actions may adversely impact our future financial position or results of operations.***

Future changes in financial accounting standards may cause adverse, unexpected fluctuations in the timing of the recognition of revenues or expenses, and may affect our financial position or results of operations. New pronouncements may occur in the future and may cause us to be required to make changes in our accounting policies in the future. Compliance with changing regulation of corporate governance and public disclosure may result in additional expenses. Changing laws, regulations and standards relating to corporate governance and public disclosure, including the Sarbanes-Oxley Act of 2002, new SEC regulations, Public Company Accounting Oversight Board ("PCAOB") pronouncements and NASDAQ rules, are creating uncertainty for companies such as ours and insurance, accounting and auditing costs are high as a result of this uncertainty and other factors.

We are committed to maintaining high standards of corporate governance and public disclosure. As a result, we intend to invest all reasonably necessary resources to comply with evolving standards, and this investment may result in increased general and administrative expenses and a diversion of management time and attention from revenue-generating activities to compliance activities.

***Varying interpretations of existing pronouncements and rules have occurred with frequency.***

Varying interpretations of existing pronouncements of accounting policies or accounting treatments of existing transactions may cause us to have to restate previously reported result of operations.

For example, in January 2014 we completed the Acquisition that we determined to be a reverse merger business combination. We allocated the purchase price consideration to the assets acquired and liabilities assumed at their estimated fair values as of the date of acquisition. Our determination that the Acquisition meets the criteria for a business combination was based on our best knowledge of the facts and circumstances surrounding the transaction, and requires the application of our judgment. Changes to this determination will result in the transaction to be accounted for as a recapitalization, with no goodwill recorded, which could cause a material change in our reported results of operations and could cause the Company to have to amend prior periodic or other filings with the SEC, at further expense to the Company.

***Our future success depends on our ability to retain key employees, consultants and advisors and to attract, retain and motivate qualified personnel.***

We are highly dependent on principal members of our executive team and key employees, the loss of whose services may adversely impact the achievement of our objectives. Recruiting and retaining other qualified employees, consultants and advisors for our business, including scientific and technical personnel, will also be critical to our success. There is currently a shortage of skilled executives in our industry, which is likely to continue. As a result, competition for skilled personnel is intense and the turnover rate can be high. We may not be able to attract and retain personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for individuals with similar skill sets. In addition, failure to succeed in preclinical or clinical studies may make it more challenging to recruit and retain qualified personnel. The inability to recruit or loss of the services of any executive, key employee, consultant or advisor may impede the progress of our research and development objectives.

***We will need to expand our organization and we may experience difficulties in managing this growth, which could disrupt our operations.***

As of April 10, 2015, we had seven full-time employees. As we mature, we may need to expand our full-time employee base and to hire more consultants and contractors. Our management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Any future growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of additional product candidates. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and/or grow revenues could be reduced, and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize product candidates and compete effectively will depend, in part, on our ability to effectively manage any future growth.

***Our employees, principal investigators, consultants and commercial partners may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.***

We are exposed to the risk of fraud or other misconduct by our employees, principal investigators, consultants and commercial partners. Misconduct by these parties could include intentional failures to comply with the regulations of the FDA and non-U.S. regulators, provide accurate information to the FDA and non-U.S. regulators, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Such misconduct could also involve the improper use of information obtained in the course of clinical studies, which could result in regulatory sanctions and cause serious harm to our reputation or could cause regulatory agencies not to approve our product candidates. While we intend to adopt a comprehensive code of conduct applicable to all of our employees, it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions.

***We face potential product liability, and, if successful claims are brought against us, we may incur substantial liability and costs. If the use of our product candidates harms patients, or is perceived to harm patients even when such harm is unrelated to our product candidates, our regulatory approvals could be revoked or otherwise negatively impacted and we could be subject to costly and damaging product liability claims.***

The use of our product candidates in clinical studies and the sale of any products for which we obtain marketing approval exposes us to the risk of product liability claims. Product liability claims might be brought against us by consumers, healthcare providers, pharmaceutical companies or others selling or otherwise coming into contact with our products. There is a risk that our product candidates may induce adverse events. If we cannot successfully defend against product liability claims, we could incur substantial liability and costs. In addition, regardless of merit or eventual outcome, product liability claims may result in:

- Impairment of our business reputation;
- Withdrawal of clinical study participants;
- Costs due to related litigation;
- Distraction of management's attention from our primary business;
- Substantial monetary awards to patients or other claimants;
- The inability to commercialize our product candidates' and
- Decreased demand for our product candidates, if approved for commercial sale.

***If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.***

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials or other work-related injuries, this insurance may not provide adequate coverage against potential liabilities. In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

***We may not be successful in our efforts to identify or discover additional product candidates.***

The success of our business depends primarily upon our ability to identify and develop product candidates. Although our existing product candidates are currently in clinical development, our research programs may fail to identify other potential product candidates for clinical development for a number of reasons. Our research methodology may be unsuccessful in identifying potential product candidates or our potential product candidates may be shown to have harmful side effects or may have other characteristics that may make the products unmarketable or unlikely to receive marketing approval.

If any of these events occur, we may be forced to abandon our development efforts for a program or programs, which would have a material adverse effect on our business and could potentially cause us to cease operations. Research programs to identify new product candidates require substantial technical, financial and human resources. We may focus our efforts and resources on potential programs or product candidates that ultimately prove to be unsuccessful.

***We may use our financial and human resources to pursue a particular research program or product candidate and fail to capitalize on programs or product candidates that may be more profitable or for which there is a greater likelihood of success.***

Because we have limited resources, we may forego or delay pursuit of opportunities with certain programs or product candidates or for indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs for product candidates may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through strategic collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate, or we may allocate internal resources to a product candidate in a therapeutic area in which it would have been more advantageous to enter into a partnering arrangement.

***We incur significant increased costs as a result of operating as a public company, and our management devotes substantial time to new compliance initiatives.***

As a US public company, we have incurred and will continue to incur significant legal, accounting and other expenses that we did not incur as a UK public company. In addition, the Sarbanes-Oxley Act, as well as rules subsequently implemented by the SEC, have imposed various requirements on public companies. In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, was enacted. There are significant corporate governance and executive compensation related provisions in the Dodd-Frank Act that require the SEC to adopt additional rules and regulations in these areas such as "say on pay" and proxy access. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain our current levels of such coverage.

***Unfavorable global economic conditions could adversely affect our business, financial condition or results of operations.***

Our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets. The recent global financial crisis caused extreme volatility and disruptions in the capital and credit markets. A severe or prolonged economic downturn, such as the recent global financial crisis, could result in a variety of risks to our business, including, weakened demand for our product candidates and our ability to raise additional capital when needed on acceptable terms, if at all. This is particularly true in Europe, which is undergoing a continued severe economic crisis. A weak or declining economy could also strain our suppliers, possibly resulting in supply disruption, or cause our customers to delay making payments for our services. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our business.

***We or the third parties upon whom we depend may be adversely affected by earthquakes or other natural disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.***

Earthquakes or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place currently are limited and are unlikely to prove adequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business.

**Risks related to ownership of our common stock**

***Because our common stock is quoted on the OTCQB, our liquidity and the price of our common stock are limited.***

Our common stock are traded on the OTCQB quotation system, which is a FINRA-sponsored entity and operated inter-dealer automated quotation system for equity securities not included in a national exchange. Quotation of our securities on the OTCQB limits the liquidity and price of our common stock more than if our common stock were quoted or listed on the NYSE or the NASDAQ, which are national securities exchanges. Lack of liquidity will limit the price at which you may be able to sell our securities or your ability to sell our common stock at all.

***The market price of our common stock may be highly volatile, and you may not be able to resell your shares at or above the price at which you purchase them.***

Companies trading in the stock market in general have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance.

The market price of our common stock may be volatile. Our stock price could be subject to wide fluctuations in response to a variety of factors, including the following:

- Adverse results or delays in pre-clinical or clinical studies;
- Inability to obtain additional funding;
- Any delay in filing an IND or BLA for any of our product candidates and any adverse development or perceived adverse development with respect to the FDA's review of that IND or BLA;
- Failure to develop successfully our product candidates;
- Failure to maintain our existing strategic collaborations or enter into new collaborations;
- Failure by us or our licensors and strategic collaboration partners to prosecute, maintain or enforce our intellectual property rights;
- Changes in laws or regulations applicable to future products;
- Inability to obtain adequate product supply for our product candidates or the inability to do so at acceptable prices;
- Adverse regulatory decisions;
- Introduction of new products, services or technologies by our competitors;
- Failure to meet or exceed financial projections we may provide to the public;
- Failure to meet or exceed the financial projections of the investment community;
- The perception of the pharmaceutical industry by the public, legislatures, regulators and the investment community;
- Announcements of significant acquisitions, strategic partnerships, joint ventures or capital commitments by us, our strategic collaboration partner or our competitors;
- Disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- Additions or departures of key scientific or management personnel;
- Significant lawsuits, including patent or stockholder litigation;
- Changes in the market valuations of similar companies;
- Sales of our common stock by us or our stockholders in the future; and
- Trading volume of our common stock.

***Because our shares may be subject to the penny stock rules, it may be more difficult to sell our shares.***

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a price of less than $5.00 (other than securities registered on certain national securities exchanges or authorized for quotation on certain automated quotation systems, provided that current price and volume information with respect to transactions in such securities is provided by the exchange or system). The OTC Markets does not meet such requirements and for so long as the price of our common stock is less than $5.00, our common stock will be deemed penny stocks. The penny stock rules require a broker-dealer, prior to a transaction in a penny stock not otherwise exempt from those rules, to deliver a standardized risk disclosure document containing specified information. In addition, the penny stock rules require that prior to effecting any transaction in a penny stock not otherwise exempt from those rules, a broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive (i) the purchaser's written acknowledgment of the receipt of a risk disclosure statement; (ii) a written agreement to transactions involving penny stocks; and (iii) a signed and dated copy of a written suitability statement. These disclosure requirements may have the effect of reducing the trading activity in the secondary market for our securities, and therefore security holders may have difficulty selling their shares.

***Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.***

Our executive officers, directors, and their affiliates and other principal stockholders beneficially own approximately 60% of our outstanding common stock. Therefore, these stockholders will have the ability to influence us through their ownership positions. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders, acting together, may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets, or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you may believe are in your best interest as one of our stockholders.

***We are an "emerging growth company," and we cannot be certain if the reduced reporting requirements applicable to emerging growth companies will make our common stock less attractive to investors.***

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy 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.

We could be an emerging growth company for up to approximately five years, although circumstances could cause us to lose that status earlier, including if the market value of our common stock held by non-affiliates exceeds $700.0 million as of any June 30 before that time or if we have total annual gross revenue of $1.0 billion or more during any fiscal year before that time, in which cases we would no longer be an emerging growth company as of the following December 31 or, if we issue more than $1.0 billion in non-convertible debt during any three-year period before that time, we would cease to be an emerging growth company immediately. Even after we no longer qualify as an emerging growth company, we may still qualify as a "smaller reporting company" which would allow us to take advantage of many of the same exemptions from disclosure requirements, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile. If the requirement for internal control over financial reporting attestation were to become applicable, then it could be determined that further steps may be considered necessary, at additional cost to the Company, in order for our internal control environment to be deemed effective.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. In the preparation of our accounting reports, we have generally taken the position not to avail ourselves of this exemption from new or revised accounting standards and, therefore, have continued to be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

***Actual or potential sales of our common stock by our employees, including our executive officers, pursuant to pre-arranged stock trading plans could cause our stock price to fall or prevent it from increasing for numerous reasons, and actual or potential sales by such persons could be viewed negatively by other investors.***

In accordance with the guidelines specified under Rule 10b5-1 of the Securities Exchange Act of 1934, as amended, and our policies regarding stock transactions, our employees, including executive officers, may adopt stock trading plans pursuant to which they have arranged to sell shares of our common stock from time to time in the future. Generally, sales under such plans by our executive officers and directors require public filings. Actual or potential sales of our common stock by such persons could cause the price of our common stock to fall or prevent it from increasing for numerous reasons. For example, a substantial number of shares of our common stock becoming available (or being perceived to become available) for sale in the public market could cause the market price of our common stock to fall or prevent it from increasing. Also, actual or potential sales by such persons could be viewed negatively by other investors.

***Future sales and issuances of our common stock or rights to purchase common stock could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.***

Additional capital will be needed in the future to continue our planned operations. To the extent we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. We may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell common stock, convertible securities or other equity securities in more than one transaction, investors may be materially diluted by subsequent sales. These sales may also result in material dilution to our existing stockholders, and new investors could gain rights superior to our existing stockholders.

***We could be subject to securities class action litigation.***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because pharmaceutical companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

***We do not intend to pay dividends on our common stock so any returns will be limited to the value of our stock.***

We have never declared or paid any cash dividends on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders will therefore be limited to the appreciation of their stock.

**ITEM 1B – UNRESOLVED STAFF COMMENTS**

None.

**ITEM 2 – PROPERTIES**

The Company occupies a facility consisting of approximately 4,000 square feet in the Ledgemont Center in Lexington, Massachusetts. The premises are divided into approximately 50% laboratory and 50% office space and are leased by the Company's subsidiary, Xenetic Bioscience, Incorporated. The lease provides for an initial term of 61 months which commenced in January 2014 with an extension option of one additional five-year term. We believe that this space is adequate for the Company's current needs and that, if additional space is required, it can be obtained at commercially reasonable terms either within the Ledgemont Center or nearby.

The Company's subsidiaries, Xenetic UK and Lipoxen Technologies Limited ("Lipoxen"), jointly occupied approximately 1,200 square feet of general office space in London in the UK until March 20, 2015, when the lease was terminated pursuant to the terms of the contract.

**ITEM 3 – LEGAL PROCEEDINGS**

We are not currently subject to any material legal proceedings, nor, to our knowledge, is any material legal proceeding threatened against us. From time to time, we may be a party to certain legal proceedings, incidental to the normal course of our business. While the outcome of these legal proceedings cannot be predicted with certainty, we do not expect that these proceedings will have a material effect upon our financial condition or results of operations.

**ITEM 4 – MINE SAFETY DISCLOSURES**

Not applicable.

## PART II

### ITEM 5 – MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is quoted under the symbol "XBIO" on the OTCQB operated by the Financial Industry Regulatory Authority, Inc. ("FINRA") and the OTCQB operated by the OTC Markets Group, Inc. Few market makers continue to participate in the OTCQB system because of high fees charged by FINRA. Consequently, market makers that once quoted our shares on the OTCQB system may no longer be posting a quotation for our shares. As of the date of this report, however, our shares are quoted by several market makers on the OTCQB. The criteria for listing on either the OTCQB are similar and include that we remain current in our SEC reporting. Our reporting is presently current, and since inception, we have filed our SEC reports on time.

Only a limited market exists for our securities. There is no assurance that a regular trading market will develop, or if developed, that it will be sustained. Therefore, a shareholder may be unable to resell his securities in our company.

The following table sets forth the range of high and low prices for our common stock for each of the periods indicated as reported by the OTCQB. These quotations reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions.

| Year ended December 31, 2013 | High Price | Low Price |
|---|---|---|
| 1st Quarter ended March 31, 2013 | $ 0.15 | $ 0.15 |
| 2nd Quarter ended June 30, 2013 | 1.50 | 0.15 |
| 3rd Quarter ended September 30, 2013 | 1.50 | 1.50 |
| 4th Quarter ended December 31, 2013 | 1.50 | 0.20 |
| **Year Ended December 31, 2014** | | |
| 1st Quarter Ended March 31, 2014 | $ 9.50 | $ 0.31 |
| 2nd Quarter Ended June 30, 2014 | 1.00 | 0.30 |
| 3rd Quarter Ended September 30, 2014 | 0.99 | 0.51 |
| 4th Quarter Ended December 31, 2014 | 0.68 | 0.175 |

On April 10, 2015 the last sales price per share of our common stock was $0.24.

Prior to entering into the Scheme referred to in Item 1 of Part I above in this Annual Report on Form 10-K, the stock of the accounting acquirer, Xenetic Biosciences (UK) Limited (formerly Xenetic Biosciences plc) was traded on the London AIM stock exchange. The table below sets forth the quarterly high and low closing prices for Xenetic Bioscience (UK) Limited common stock, in pounds sterling ("£"), as quoted on the London AIM stock exchange. The table sets forth the prices after taking into consideration the effects of the share reduction that was part of the Scheme.

| Year ended December 31, 2012 | High Price | Low Price |
|---|---|---|
| 1st Quarter ended March 31, 2012 | $ 0.34 | $ 0.23 |
| 2nd Quarter ended June 30, 2012 | 0.25 | 0.18 |
| 3rd Quarter ended September 30, 2012 | 0.23 | 0.18 |
| 4th Quarter ended December 31, 2012 | 0.19 | 0.14 |
| **Year Ended December 31, 2013** | | |
| 1st Quarter Ended March 31, 2013 | $ 0.30 | $ 0.14 |
| 2nd Quarter Ended June 30, 2013 | 0.24 | 0.19 |
| 3rd Quarter Ended September 30, 2013 | 0.22 | 0.18 |
| 4th Quarter Ended December 31, 2013 | 0.20 | 0.13 |

**Penny Stock**

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a market price of less than $5.00, other than securities registered on certain national securities exchanges or quoted on the NASDAQ system, provided that the current price and volume information with respect to transactions in such securities is provided by the exchange or system. The penny stock rules require a broker-dealer, prior to a transaction in a penny stock, to deliver a standardized risk disclosure document prepared by the SEC, that: (a) contains a description of the nature and level of risk in the market for penny stocks in both public offerings and secondary trading; (b) contains a description of the broker's or dealer's duties to the customer and of the rights and remedies available to the customer with respect to a violation of such duties or other requirements of the securities laws; (c) contains a brief, clear, narrative description of a dealer market, including bid and ask prices for penny stocks and the significance of the spread between the bid and ask price; (d) contains a toll-free telephone number for inquiries on disciplinary actions; (e) defines significant terms in the disclosure document or in the conduct of trading in penny stocks; and (f) contains such other information and is in such form, including language, type size and format, as the SEC shall require by rule or regulation.

The broker-dealer also must provide, prior to effecting any transaction in a penny stock, the customer with (a) bid and offer quotations for the penny stock; (b) the compensation of the broker-dealer and its salesperson in the transaction; and (c) the number of shares to which such bid and ask prices apply, or other comparable information relating to the depth and liquidity of the market for such stock; and (d) a monthly account statement showing the market value of each penny stock held in the customer's account.

In addition, the penny stock rules require that prior to a transaction in a penny stock not otherwise exempt from those rules, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's written acknowledgment of the receipt of a risk disclosure statement, a written agreement as to transactions involving penny stocks, and a signed and dated copy of a written suitability statement.

These disclosure requirements may have the effect of reducing the trading activity for our common stock. Therefore, stockholders may have difficulty selling our securities.

**Holders of Record**

As of April 10, 2015 there were 438 holders of common stock of the Company of record.

**Dividends**

There are no restrictions in our articles of incorporation or bylaws that prevent us from declaring dividends. The Nevada Revised Statutes, however, do prohibit us from declaring dividends where after giving effect to the distribution of the dividend:

- We would not be able to pay our debts as they become due in the usual course of business; or
- Our total assets would be less than the sum of our total liabilities plus the amount that would be needed to satisfy the rights of shareholders who have preferential rights superior to those receiving the distribution.

The Company has never previously declared or paid any cash dividends on its common stock. We currently intend to retain earnings and profits, if any, to support our business strategy and do not intend to pay any cash dividends within the foreseeable future. Any future determination to pay cash dividends will be at the sole discretion of the Company's Board of Directors and will depend upon the financial condition of the Company, its operating results, capital requirements, general business conditions and any other factors that the Board of Directors deems relevant.

**Recent Sales of Unregistered Securities**

***Baxter SA Purchase Agreement – Unregistered Shares Sold in January 2014***

On January 29, 2014, the Company entered into a Stock Purchase Agreement (the "Purchase Agreement") with Baxter SA, pursuant to which the Company sold to Baxter SA 10,695,187 shares of the Company's common stock, par value $0.01 per share (the "Shares") for $10 million (the "Purchase Price").

Pursuant to the Purchase Agreement, Baxter SA agreed that until the earlier of (i) three months after the effective date of the listing of the Company's common stock on the NASDAQ Stock Market; or (ii) January 29, 2015, Baxter SA would not assign, transfer, sell or dispose of the Shares to any party other than a wholly owned subsidiary. In addition, Baxter SA agreed that until the 12 month anniversary of the Lock-Up Expiration Date, it would not sell or offer to sell any shares of common stock of the Company in an amount that would exceed 15% of the daily trading volume of the Company's common stock on the principal market or exchange on which the Company's shares of common stock are traded, and in no event would Baxter SA sell or offer to sell more than 15% of the Shares in any one month period. In February 2015, Baxter agreed in writing to a further lock-up period expiring in August 2015 and certain other related restrictions.

The Shares were sold in a private placement and were not registered under the Securities Act, or the securities laws of any state, and were offered and sold in reliance on the exemption from registration afforded by Section 4(a)(2) and Regulation D (Rule 506) under the Securities Act and corresponding provisions of state securities laws, which exempt transactions by an issuer not involving any public offering. Baxter SA is an "Accredited Investor" as such term is defined in Regulation D promulgated under the Securities Act.

***FDS Pharma ASS Intellectual Property Assignment and Share Issuance – Unregistered Shares Issued in December 2014***

On December 31, 2014, in consideration of the assignment of certain intellectual property rights by Dmitry Genkin and FDS Pharma ASS to Lipoxen Technologies Limited, the Company issued to FDS Pharma ASS 3,244,784 shares of the Company's common stock, par value $0.01 per share. FDS Pharma ASS is related party of SynBio, which is an affiliate of the Company. Please refer to exhibit 10.01 filed with this Annual Report on Form 10-K and is incorporated herein by reference.

These shares were issued in a private placement and were not registered under the Securities Act, or the securities laws of any state, and were offered and issued in reliance on the exemption from registration afforded by Regulation D under the Securities Act and corresponding provisions of state securities laws, which exempt transactions by an issuer not involving any public offering. FDS Pharma ASS is an "Accredited Investor" as such term is defined in Regulation D promulgated under the Securities Act.

***Issuances of Common Stock Warrants***

*SynBio LLC Common Stock Warrant Issuance*

On December 31, 2014, the Company issued a warrant to purchase 6,745,000 shares of the Company's common stock, par value $0.01, to SynBio in furtherance of our co-development clinical objectives. The initial exercise price for the purchase of the warrant is $0.77 per share with a term of five years from the grant date. Simultaneously, warrants to purchase 320,000 shares of the Company's common stock, par value $0.01, were issued to SynBio and Pharmsynthez non-director designees under the same terms and conditions of the SynBio warrant. Pharmsynthez is a related party of SynBio, which is an affiliate of the Company. These warrants contain vesting triggers based on the achievement by SynBio of specific clinical development objectives. Please refer to exhibit 10.02 filed with this Annual Report on Form 10-K and is incorporated herein by reference.

*Serum Institute of India Limited Common Stock Warrant Issuance*

On December 31, 2014, the Company issued a warrant to purchase 3,200,000 shares of the Company's common stock, par value $0.01, to Serum Institute in furtherance of our co-development clinical objectives. The initial exercise price for the purchase of the warrant is $0.77 per share with a term of five years from the grant date. Simultaneously, warrants to purchase 160,000 shares of the Company's common stock, par value $0.01, were issued to Serum Institute non-director designees under the same terms and conditions of the Serum Institute warrant. These warrants contain vesting triggers based on the achievement by Serum Institute of specific clinical development objectives. Serum Institute is a related party of the Company. Please refer to exhibit 10.03 filed with this Annual Report on Form 10-K and is incorporated herein by reference.

*Non-Employee Director Common Stock Warrant Issuance*

On December 31, 2014, the Company issued a warrant to purchase 1,600,000 shares of the Company's common stock, par value $0.01, to a non-employee director for services provided to the Company. The initial exercise price for the purchase of the warrant is $0.77 per share with a term of five years from the grant date. This warrant was fully vested on the date of grant. Please refer to exhibit 10.04 filed with this Annual Report on Form 10-K and is incorporated herein by reference.

These warrants are issued by the Company pursuant to an exemption from the registration either (a) under the Securities Act generally, in that the transactions are between an issuer and sophisticated investors and do not involve any public offering within the meaning of Section 4(a)(2) or (b) under Regulation S promulgated under the Securities Act in that offers, sales and issuances are not made to persons in the United States and no directed selling efforts are made in the United States.

**Repurchases of Equity Securities of the Issuer**

During 2014, we did not repurchase any of our outstanding securities.

**ITEM 6 – SELECTED FINANCIAL DATA**

We are not required to provide the information required by this Item because we are a smaller reporting company.

**ITEM 7 – MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

**BUSINESS OVERVIEW**

As discussed under Recent Developments in Item 1, above, in this Annual Report filed on Form 10-K, the Company is now carrying on the business of Xenetic UK as its sole line of business. Xenetic UK, and now therefore, the Company, is a clinical stage biopharmaceutical company that is focused on the development of certain drug candidates for use in humans that incorporate the use of its patented and proprietary platform technologies that we believe will enable the creation of novel and next generation drug therapies.

The Company is currently in various stages of development with respect to its three core patented and proprietary technologies, these being, PolyXen® (for biologics), OncoHist™ (as a broad spectrum oncology therapy), and ImuXen® (for vaccines).

The Company's three core technologies are summarized as follows:

| | |
|---|---|
| PolyXen® | An enabling technology that utilizes Polysialic Acid ("PSA"), a biopolymer, consisting of a chain of sialic acids which is a natural constituent of the human body. PSA is designed to extend the half-life in circulation in the human body for a variety of existing drug molecules and, thereby, to create potentially superior next generation drug candidates. |
| OncoHist™ | A novel therapeutic platform that utilizes the properties of the human histone H1.3 ("H1.3") for the development of drug candidates for the treatment of a broad range of cancer indications. OncoHist™, unlike many competing oncology therapies, is based on a molecule occurring naturally in the human body, in the cell nucleus, and is therefore expected to be less toxic and immunogenetic than other oncology therapies. |
| ImuXen® | A novel liposomal co-entrapment encapsulation technology designed to create new vaccines and improve the use and efficacy of certain existing vaccines for use in the human body. The technology is based on the co-entrapment of the nominated antigen(s) in a liposomal vesicle, a design that is intended to maximize both cell and immune system mediated responses. |

All of the Company's current drug candidates are in the development stage and none has yet received regulatory approval for marketing in the US by the FDA or by any other applicable agencies in other countries.

**Critical Accounting Estimates**

The preparation of our financial statements in conformity with US GAAP requires management to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amount of expenses during the reporting period. On an ongoing basis, we evaluate our estimates that are based on historical experience and on various assumptions that we believe to be reasonable under the circumstances. The result of these evaluations forms the basis for making judgments about the carrying values of assets and liabilities and the reported amount of expenses that are not readily apparent from other sources. Because future events and their effects cannot be determined with certainty, actual results could differ from our assumptions and estimates, and such differences could be material.

Management believes that the following accounting estimates are the most critical to aid in fully understanding and evaluating our reported financial results, and they require management's most difficult subjective or complex judgments, resulting from the need to make estimates about the effect of matters that are inherently uncertain. The following narrative describes these critical accounting estimates, the judgments and assumptions and the effect if actual results differ from these assumptions.

**Revenue Recognition**

We derive our revenue from our license and collaboration arrangements with pharmaceutical and biotechnology partners, some of which include royalty agreements based on potential net sales of approved commercial pharmaceutical products. Revenue from our collaborative partners are generally paid directly by the partners and are recognized on the accrual basis when all the following criteria are met: (i) persuasive evidence of an arrangement exists, (ii) delivery (or passage of title) has occurred or services have been rendered, (iii) the seller's price to the buyer is fixed or determinable, and (iv) collectability is reasonably assured.

The terms of our license agreements include delivery of an IP license to a collaboration partner. We may be compensated under license arrangements through a combination of non-refundable upfront receipts, development and regulatory objective receipts and royalty receipts on future product sales by partners. We make our best estimate of the period over which we expect to fulfil our performance obligations, which may include technology transfer assistance, research activities, clinical development activities, and manufacturing activities from development through the commercialization of the product. Given the uncertainties of these collaboration arrangements, significant judgment is required to determine the duration of the performance period.

Non-refundable upfront license fees received, whereby our continued performance or future obligations are considered inconsequential or perfunctory to the relevant licensed technology, are recognized as revenue upon delivery of the technology in accordance with US GAAP. This determination requires significant judgment to assess the nature of any continuing obligations. Reimbursements for research and development services completed by us related to the collaboration agreements are recognized in operations as revenue on a gross basis.

We expect to receive royalty receipts in the future as products are sold. We expect to recognize royalty revenue in the period of sale, based on the underlying contract terms, provided that the reported sales are reliably measurable and we have no remaining performance obligations, assuming all other revenue recognition criteria are met.

Our license and collaboration agreements with certain collaboration partners could also provide for future receipts to us based solely upon the performance of the respective collaboration partner in consideration of milestone extensions or upon the achievement of specified sales volumes of approved drugs. For such receipts, we expect to recognize the receipts as revenue when earned under the applicable contract terms on a performance basis or ratably over the term of the agreement. These receipts may also be recognized as revenue when our continued performance or future obligations are considered inconsequential or perfunctory.

**Share-Based Compensation**

Share-based compensation includes grants of options to employees and non-employees to purchase shares of common stock, grants of Joint Share Ownership Plan ("JSOP") awards to employees, as well as agreements to issue common stock in exchange for services provided by non-employees. Currently, we utilize one option plan, the Xenetic Biosciences, Inc. Equity Incentive Plan pursuant to which we may grant options to purchase shares of common stock to employees and non-employees. Prior to the Acquisition, the Company had two option plans, the Lipoxen plc Unapproved Share Option Plan and the Xenetic Biosciences plc 2007 Share Option Scheme. Both of these plans were converted subsequent to year end to reflect the new shares of common stock issued related to the Acquisition. As part of the conversion, option holders under both plans have the right to subscribe for a number of shares of common stock in exchange for the cancellation and surrender by the option holder in a manner similar to which the shareholders prior to the Acquisition were given the right to acquire shares of common stock in the new company according to the terms of the Acquisition.

We measure share-based compensation in accordance with Financial Accounting Standards Board Accounting Standards Codification ("ASC") Topic 718, *Compensation – Stock Compensation.* Stock option compensation expenses are based on the estimated fair value of the underlying option calculated using the Black-Scholes option pricing model, which requires the input of subjective assumptions and judgments, including estimating share price volatility and expected term of the awards. Our shares do not have a sufficient trading history for us to adequately assess the fair value of the stock option grants. Therefore, for all share-based payments, we determine the expected volatility based on a weighted-average of the historical volatility of a peer group of comparable publicly traded companies with product candidates in similar stages of development to our product candidates in conjunction with our historical volatility. We intend to consistently apply this methodology of using a peer group of comparable companies until sufficient historical information regarding the volatility of our own share price becomes available. For employee stock options issued in 2014 that qualify as "plain vanilla" stock options in accordance with Staff Accounting Bulletin No. 110 ("SAB 110") issued by the SEC, the expected term is estimated using the simplified method, as defined in SAB 110. The Company has a limited history of stock option exercises, which does not provide a reasonable basis for the Company to estimate the expected term of employee stock options. For all other employee stock options, we estimate the expected life using judgment based on the anticipated research and development milestones of the Company's clinical projects and behavior of the Company's employees. The expected life of non-employee options is the contractual life of the option. The assumptions used in calculating the fair value of the stock option grants represent our best estimates and involve inherent uncertainties and the application of our judgment. As a result, if factors change and we use different assumptions, share-based compensation expense could be materially different in the future.

For employee options that vest based solely on service conditions, the fair value measurement date is generally on the date of grant and the related compensation expense, less expense for expected forfeitures, is recognized on a straight-line basis over the requisite vesting period of the awards. For non-employee options, the fair value measurement date is the earlier of the date the performance of services is complete or the date the performance commitment has been reached. We generally determine that the fair value of the stock options is more reliably measurable than the fair value of the services received. Compensation expense related to stock options granted to non-employees that vest based solely on service conditions is subject to re-measurement at each reporting period until the options vest and is recognized on a straight-line basis over the estimated vesting period of the awards.

We estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. During 2014 and 2013, we applied a forfeiture rate of 0% as we have not historically experienced forfeitures. During 2013, options to purchase approximately two million shares of common stock were forfeited by a management executive as a result of his unanticipated short period of employment. However, we concluded this situation is an independent event and we do not expect this type of forfeiture to reoccur in the future. Upon exercise, stock options are redeemed for newly issued shares of common stock.

The fair value of common stock awards issued in exchange for services provided by non-employees is generally determined by using the fair value of the services provided, as this provides the most reliable measure of the fair value of the awards. Share-based compensation expense is recognized as services are rendered on a straight-line basis. The assumptions used in calculating the fair value of the common stock awards represent our best estimates and involve inherent uncertainties and the application of our judgment. As a result, if factors change and we use different assumptions, share-based compensation expense related to the common stock awards could be materially different in the future.

Under the JSOP, shares of the Company are jointly purchased at fair market value by the participating executives and the trustees of the JSOP trust, with shares held in the JSOP trust. For US GAAP purposes the awards are valued as employee options. The JSOP trust holds the shares of the JSOP until such time as the JSOP shares are vested and the participating executives exercise their rights under the JSOP. The JSOP trust is granted an interest bearing loan by the Company in order to fund the purchase of its interest in the JSOP shares. The loan held by the trust is eliminated on consolidation in the financial statements of the Company. The Company funded portion of the share purchase price is deemed to be held in treasury until such time as they are transferred to the employee and is recorded as a reduction in equity.

The exercise price of the JSOP "option" is deemed to be the market value of the shares at the date of issue. The awards vest based on certain market conditions, which require each tranche of shares to meet specific market share price hurdles, or change in control conditions, as defined by the plan. Under the JSOP and subject to the vesting of the participants' interest, participating executives will, when the JSOP shares are sold, be entitled to a share of the proceeds of sale equal to the growth in market value of the JSOP shares versus the exercise price, less simple interest on the original share purchase price, net of executives' cash contribution at inception, as agreed for each grant (the "Carry Charge"). The balance of the proceeds will remain to the benefit of the JSOP trust and be applied to the repayment of the loan originally made by the Company to the JSOP trust. Any funds remaining in the JSOP trust after settlement of the loan and any expenses of the JSOP trust are for the benefit of the Company.

We measure the fair value of JSOP awards using Monte Carlo simulations, which requires estimates based on the Company's judgment, as well as other assumptions. These estimates include the expected term of each tranche of the JSOP awards, which the Company determines to be the initial life of the awards, and expected volatility, which is based on a weighted average of the historical volatility of a peer group of comparable publicly traded companies with product candidates in similar stages of development to the Company's product candidates in conjunction with the historical volatility of Xenetic Biosciences plc's shares when traded on the UK AIM market. The Company has applied an expected dividend yield of 0% as the Company has not historically declared a dividend and does not anticipate declaring a dividend during the expected life of the awards. The risk-free rate is based upon the US Treasury yield curve in effect at the time of grant, with a term that approximates the expected life of the awards. The compensation expense is recorded over the expected life of the option, regardless of whether the awards vest. Having established the full value of the JSOP awards using the Monte Carlo simulation outlined above, a deduction is made in respect of the anticipated Carry Charge in order that the expense recorded in the financial statements only represents the participating executives' net interest in the awards. The assumptions used in calculating the fair value of the JSOP awards represent our best estimates and involve inherent uncertainties and the application of our judgment. As a result, if factors change and we use different assumptions, share-based compensation expense related to the JSOP awards could be materially different in the future.

On exercise of the JSOP awards by the executives the Carry Charge due to the Company will be recognized as additional paid-in capital, arising from the sale of treasury stock.

**Warrants**

In connection with certain financing and collaboration arrangements, we issue warrants to purchase shares of the Company's common stock to our collaborative partners. Outstanding warrants are standalone instruments that are not puttable or mandatorily redeemable by the holder and are classified as equity awards. We measure the fair value of the awards using the Black-Scholes option pricing model, which requires the input of subjective assumptions and judgments, including estimating the expected term of the awards and the share price volatility, at each reporting period until the measurement date is reached. The expected term is deemed to be the contractual life of the warrant and we determine the expected volatility based on a weighted-average of the historical volatility of a peer group of comparable publicly traded companies with product candidates in similar stages of development to our product candidates in conjunction with our historical volatility.

All other warrants are recorded at fair value as compensation expense on a straight-line basis over the requisite service period or at the date of issuance, if there is not a service period or if service has already been rendered. For warrants that contain vesting triggers based on the achievement of certain objectives, the Company applies judgment to estimate the probability and timing of the achievement of those objectives. These estimates involve inherent uncertainties, and as a result, if the probability or timing of the achievement of those objectives change, expense related warrants could be materially different in the future.

Warrants issued to collaboration partners in conjunction with the issuance of common stock are recorded at fair value as a reduction in additional paid-in capital of the common stock issued.

**Business Combinations**

We have a history of engaging in acquisition transactions that require us to evaluate whether the transaction meets the criteria for a business combination and, in some cases, whether it meets the definition of a reverse merger. For those acquisitions that meet the criteria for a reverse merger, we evaluate the entities involved to distinguish the appropriate accounting acquirer and acquiree according to ASC Topic 805, *Business Combinations* ("ASC 805"). If the transaction does not meet the business combination requirements, the transaction is accounted for as a recapitalization and no goodwill or intangible assets are recognized. If the acquisition meets the definition of a business combination, we allocate the purchase price, including any contingent consideration, to the assets acquired and the liabilities assumed at their estimated fair values as of the date of the acquisition with any excess of the purchase price paid over the estimated fair value of net assets acquired recorded as goodwill. The fair value of the assets acquired and liabilities assumed is typically determined by using either estimates of replacement costs or discounted cash flow valuation methods.

When determining the fair value of tangible assets acquired, we estimate the cost to replace the asset with a new asset taking into consideration such factors as age, condition and the economic useful life of the asset. When determining the fair value of intangible assets acquired, we use judgment to estimate the applicable discount rate, growth rates and the timing and amount of future cash flows. The fair value of assets acquired and liabilities assumed is typically determined using the assistance of an independent third party specialist. The assumptions used in calculating the fair value of tangible and intangible assets represent our best estimates and involve inherent uncertainties and the application of our judgment. As a result, if factors change and we use different assumptions, valuations of tangible and intangible assets and the resulting goodwill balance related to the business combination could be materially different or impaired in the future.

During January 2014, we completed the Acquisition that we determined to be a reverse merger business combination. In accordance with ASC 805, we allocated the purchase price consideration to the assets acquired and liabilities assumed at their estimated fair values as of the date of acquisition. Our determination that the Acquisition meets the criteria for a business combination was based on our best knowledge of the facts and circumstances surrounding the transaction, and requires the application of our judgment.

**Goodwill and Indefinite-lived Intangible Assets**

*Goodwill*

Goodwill is not amortized but is reviewed for impairment annually as of October 1, or when events or changes in the business environment indicate that all, or a portion, of the carrying value of the reporting unit may no longer be recoverable. Under this method, we compare the fair value of our reporting unit to its carrying value. If the fair value is less than the carrying amount, a more detailed analysis is performed to determine if goodwill is impaired. An impairment loss, if any, is measured as the excess of the carrying value of goodwill over the fair value of goodwill. We also have the option to first assess qualitative factors to determine whether the existence of events or circumstances leads us to determine that it is more likely than not (that is, a likelihood of more than 50%) that goodwill is impaired. If we choose to first assess qualitative factors and it is determined that it is not more likely than not goodwill is impaired, we are not required to take further action to test for impairment. We also have the option to bypass the qualitative assessment and perform only the quantitative impairment test, which we may choose to do in some periods but not in others. As the option to perform the qualitative assessment is not a permanent election, we reassess this option during each annual impairment review.

We determine our reporting unit by identifying the components of our operating segment with similar economic characteristics based on quantitative and qualitative factors that have discrete financial information available. We determined that we have one reporting unit as of October 1, 2014 and 2013, the dates of our annual impairment reviews. Based on our annual impairment reviews, we used the quantitative method and determined no adjustment to the carrying value of goodwill would be necessary as the fair value of our reporting unit significantly exceeded its respective carrying value as of October 1, 2014 and 2013, respectively. If the fair value of our reporting unit were to be reduced by one-half, the fair value would still significantly exceed the carrying value of the reporting unit at October 1, 2014. There can be no assurance that future events will not result in an impairment of goodwill.

*Indefinite-lived Intangible Assets*

Our indefinite-lived intangible assets consist of acquired IPR&D. IPR&D intangible assets are considered indefinite-lived intangible assets until completion or abandonment of the associated research and development efforts. IPR&D is not amortized but is reviewed for impairment annually as of October 1, or when events or changes in the business environment indicate the carrying value may be impaired. If the fair value of the intangible asset is less than the carrying amount, we perform a quantitative test to determine the fair value. The impairment loss, if any, is measured as the excess of the carrying value of the intangible asset over its fair value. We also have the option to first assess qualitative factors to determine whether the existence of events or circumstances leads us to determine that it is more likely than not (that is, a likelihood of more than 50%) that our indefinite-lived intangible asset is impaired. If we choose to first assess qualitative factors and it is determined that it is not more likely than not our indefinite-lived intangible asset is impaired, we are not required to take further action to test for impairment. We also have the option to bypass the qualitative assessment and perform only the quantitative impairment test, which we may choose to do in some periods but not in others. As the option to perform the qualitative assessment is not a permanent election, we reassess this option during each annual impairment review. During 2014 and 2013, we used the quantitative method and determined the fair value of the indefinite-lived intangible asset exceeded its carrying value as of October 1, 2014 and 2013.

Significant judgments are inherent in the calculation of fair value. With the assistance of an independent third party, we calculated the fair value of our IPR&D by using the Multi-Period Excess Earnings Method (the "MPEEM") which is a form of the income approach. Under the MPEEM, the fair value of an intangible asset is equal to the present value of the asset's incremental after-tax cash flows (excess earnings) remaining after deducting the market rates of return on the estimated value of contributory assets (contributory charge) over its remaining useful life. This method requires us to make long-term projections of the amount and timing of income and expenses related to development and commercialization of the acquired intangible asset and assumptions regarding the rate of return on contributory assets, the weighted average cost of capital and the discount rate for estimated future after-tax cash flows. Specifically, this method took into account our estimates of future incremental milestone payments that may be achieved upon completion of clinical trial stages, regulatory approval and sales goals upon commercialization, as well as our expected royalty income based on sales upon commercialization. Projected expenses are based on our forecasted spend required to complete the development of our IPR&D, which will require the Company to raise further capital to fund the development. Our projections are estimates subject to change based on several factors including the results of clinical trials and delays in regulatory approval. The discount rate used is commensurate with the uncertainties associated with the economic estimates described above and reflects the stage of development, the time and resources needed to complete the development of the product and the risks of advancement through regulatory approval processes.

Key assumptions utilized in the fair valuation of our indefinite-lived intangible asset OncoHist™ are as follows:

- Discount rate – 47.5%
- Weighted average cost of capital – 24.6%
- Estimated aggregate milestone receipts – approximately £350 million
- Royalty rates – 10% of net sales

While we believe reasonable estimates and appropriate assumptions were utilized to calculate the fair value of OncoHist™, it is possible a material change could occur. Use of different estimates and judgments could yield materially different results in our analysis and could result in materially different asset values or expense.

There can be no assurance that we will be able to successfully develop and complete the acquired IPR&D program and profitably commercialize the underlying product candidates before our competitors develop and commercialize similar products, or at all. Moreover, if the acquired IPR&D program fails or is abandoned during development, then we may not realize the value we have estimated and recorded in our financial statements on the acquisition date, and we may also not recover the research and development investment made since the acquisition date to further develop that program. If such circumstances were to occur, our future operating results could be materially adversely impacted.

We did not record an impairment charge as a result of our goodwill or indefinite-lived intangible asset impairment tests in 2014 or 2013. We will continue to closely monitor the performance of our indefinite-lived intangible asset and reporting unit. If the business experiences adverse changes in our key assumptions and judgments, we will perform an interim goodwill and/or indefinite-lived intangible asset impairment analysis. There can be no assurance that future events will not result in an impairment of our goodwill or indefinite-lived intangible asset. As a result of the going concern uncertainty discussed under *Liquidity and Capital Resources* below, the recoverability and classification of the Company's intangible assets and goodwill could be adversely affected.

**RESULTS OF OPERATIONS**

The comparison of our historical results of operations for the year ended December 31, 2014 to the year ended December 31, 2013 is as follows:

| Description | 2014 | 2013 | Increase (Decrease) | Percentage Change |
|---|---|---|---|---|
| Revenue | $ – | $ 1,000,000 | $ (1,000,000) | 100.0 |
| Cost of revenue | – | – | – | – |
| Gross profit | – | 1,000,000 | (1,000,000) | 100.0 |
| Operating costs and expenses: | | | | |
| Research and development | 6,323,896 | 3,082,384 | 3,241,512 | 105.2 |
| General and administrative | 6,600,870 | 6,464,908 | 135,962 | 2.1 |
| Loss from operations | (12,924,766) | (8,547,292) | (4,377,474) | 51.2 |
| Other income (expense): | | | | |
| Loss on disposal of subsidiaries | (1,069,675) | – | (1,069,675) | 100.0 |
| Other income (expense) | (326,916) | (66,177) | (260,739) | 394.0 |
| Interest income | 18,959 | 34,855 | (15,896) | 45.6 |
| Interest expense | (4,706) | (632) | (4,074) | 644.4 |
| | (1,382,338) | (31,954) | (1,350,384) | 4,226.0 |
| Loss before income taxes | (14,307,104) | (8,579,246) | (5,727,858) | 66.8 |
| Income tax | – | – | – | – |
| Net loss | $ (14,307,104) | $ (8,579,246) | $ (5,727,858) | 66.8 |

**Revenue**

Revenue for the year ended December 31, 2014 decreased 100% to $0 from $1,000,000 for the year ended December 31, 2013. The revenue for 2013 is comprised of a single transaction consisting of an upfront non-refundable license fee in the amount of $1 million received from Baxter. We did not record any upfront license fee revenue from Baxter during 2014.

**Cost of Revenue**

Cost of revenue was $0 for the years ended December 31, 2014 and 2013. The only revenue recorded during 2013 consisted of an upfront non-refundable license fee that had no direct costs associated with it for the period.

**Research and Development**

The Company engages in independent research and development ("R&D") in connection with its various technologies.

The total R&D spend by subsidiary location for the years ended December 31, 2014 and 2013 is set forth in the table below:

| | Year ended December 31, | |
|---|---|---|
| **Subsidiary Location** | **2014** | **2013** |
| United Kingdom | $ 2,232,306 | $ 2,702,467 |
| United States | 4,090,540 | 369,813 |
| Germany | 1,050 | 10,104 |
| Total research and development expense | $ 6,323,896 | $ 3,082,384 |

Overall, corporate R&D expenses for the year ended December 31, 2014 increased by approximately $3.24 million, or 105.2% to $6.32 million from $3.08 million in 2013. The table below sets forth the R&D costs incurred by the Company, by category of expense, for the years ended December 31, 2014 and 2013:

| | Year ended December 31, | |
|---|---|---|
| **Category of Expense** | **2014** | **2013** |
| Salaries and wages | $ 729,082 | $ 1,191,806 |
| Share-based compensation expense | 141,634 | 60,980 |
| Outside services and Contract Research Organizations | 5,107,990 | 1,478,411 |
| Rents | 78,076 | 237,888 |
| Lab consumables | 26,280 | 33,734 |
| Other | 240,834 | 79,565 |
| Total research and development expense | $ 6,323,896 | $ 3,082,384 |

***Research and Development by Subsidiary Location***

The increase in R&D expenses in the US during 2014 was primarily due to costs associated with IND enabling preclinical work for the OncoHist™ program that began in 2014. The UK expenses are attributed primarily to the ongoing ErepoXen® human clinical trials being conducted in Australia.

During 2013 we began the process of transitioning our R&D laboratory facilities to the US, leading to a reduction in non-program specific related costs incurred in the UK, with a corresponding increase in such costs incurred in the US. The sharp increase in US-based R&D expenses in 2014 were expected as the new Lexington facility increased its operational activity.

***Research and Development by Category of Expense***

*Salaries and Wages*

Salaries and wages decreased by approximately $463,000 or 38.8% to $729,082 for the year ended December 31, 2014 from $1,191,806 for the prior year. The decrease is due to the planned overall reduction in the number of scientific personnel in 2014 as compared to 2013. The closing of the UK lab facility at the end of 2013 resulted in the layoffs of five UK-based scientific personnel, which were only partially offset by the hiring of two new scientists in the US. The Company continued its planned increase in the use of contract research organizations and external consultants during 2014.

*Share-based Compensation*

Share-based compensation expenses increased approximately $81,000 or 132.3% to $141,634 for the year ended December 31, 2014 from $60,980 for the prior year. The fluctuation is from expected changes resulting from the normal expensing of the fair value of outstanding stock options, primarily driven by the increase resulting from the required re-measurement of outstanding non-employee stock options at the balance sheet date.

*Outside Services and CRO Costs*

The significant increase in outside services and CRO costs of approximately $3.63 million, or 245.5% for the year ended December 31, 2014 is primarily due to the planned IND enabling preclinical work conducted in connection with the OncoHist™ program. The costs of conducting the ongoing ErepoXen® human clinical trials in Australia were relatively static, with costs of approximately $1.12 million and $1.23 in 2014 and 2013, respectively.

*Rents*

The decline in rent expense of approximately $160,000, or 67.2%, to $78,076 for the year ended December 31, 2014 from $237,888 for the prior year is due to the planned closing of the UK research facility at the end of 2013. This decrease was partially offset by the cost of operating the Company's new research facility in the US, which began operations in January 2014. The Company believes the new research facility in the US, which has lower operating costs than the former research facility in the UK, will meet its needs through at least 2016.

*Lab Consumables*

The slight decrease of approximately $7,500 in lab consumables expense is due to normal fluctuations in the amount of those supplies required for in-house research activities.

*Other*

Other expenses increased approximately $161,000, or 202.7%, to $240,834 for the year ended December 31, 2014 from $79,565 for the prior year. The increase in other expense results from the net aggregate change of all miscellaneous costs, including an approximately $56,000 increase in computer equipment and software related costs, approximately $37,000 increase in maintenance and utilities costs, approximately $32,000 increase in depreciation expense and a $30,000 increase in recruiting costs.

***Clinical Development Strategy***

The Company's strategy has been to co-ordinate its R&D effort through its new US Lexington facility. This has entailed the closing of laboratory facilities in the UK. The Company has a clear strategy of becoming a specialty drug developer. Accordingly it plans to increase both its current US-based internal level of effort alongside the initiation of new programs with the assistance of external entities, such as Contract Research and Contract Manufacturing Organizations. There will, therefore, be a need for the Company to access additional capital resources to fund this strategy and the rate at which the strategy can be implemented will be entirely dependent upon access to such funding.

**General and Administrative**

General and administrative expenses increased by approximately $136,000, or 2.1%, to $6,600,870 for the year ended December 31, 2014 from $6,464,908 for the prior year. Although the total level of general and administrative costs did not change significantly, legal and accounting professional service costs increased approximately $674,000 and investor relations, regulatory fees and insurance costs increased approximately $493,000 due to the first year of normal administrative costs of conducting business as a US public company in 2014, which did not exist prior to the Acquisition. These increases were offset by an approximately $1.15 million decrease in contractor and consultant service costs, the bulk of which related to the Acquisition, which were mostly incurred in 2013.

Salaries and wages, share-based compensation and other employee benefit costs increased by approximately $38,000. All other general and administrative expenses resulted in a net increase of approximately $60,000 for the year ended December 31, 2014 over the comparable period in 2013.

**Impairment of In-Process Research and Development**

We did not record any impairment charges related to acquired IPR&D during 2014 or 2013.

**Loss on Disposal of Subsidiaries**

The loss on disposal of subsidiaries is related to one transaction, the Hive Out Agreement, during the year ended December 31, 2014. There was not a disposal of a subsidiary during the year ended December 31, 2013.

**Other Income (Expense)**

Other expense increased approximately $261,000, or 394.0% to $326,916 for the year ended December 31, 2014 from $66,177 in 2013. This increase is primarily related to losses resulting from the high fluctuation of foreign currency exchange rates during 2014 due to the steady weakening of the British pound against the US dollar throughout 2014.

**Interest Income**

Interest income decreased by $15,896, or 46% to $18,959 for the year ended December 31, 2014 from $34,855 in 2013. The decrease is proportional to the decrease in average cash balances held by the Company during the period from January 1, 2013 to December 31, 2014 and is not due to any change in investments.

**Interest Expense**

Interest expense decreased by $4,074, or 644%, to $4,706 for the year ended December 31, 2014 from $632 in 2013. The increase is primarily due to a financing with respect to the Company's contribution to the landlord's leasehold improvements related to the Company's office and laboratory space lease which commenced on January 1, 2014.

**Liquidity and Capital Resources**

At December 31, 2014 and 2013 we had approximately $78,000 and $1.7 million of working capital (current assets minus current liabilities), respectively. At December 31, 2014 we had approximately $2.5 million in cash and $2.7 million in total current liabilities, which includes $395,000 due to an affiliate of the Company, which the Company does not expect to repay prior to a registered equity offering by the Company, and balances of approximately $635,000 currently disputed by the Company. At December 31, 2013 we had cash and current liabilities of $4.8 million and $3.6 million respectively. Our working capital has been reduced in 2014 due to our net loss of $14.3 million that includes $12.3 million net cash used in operating activities comprised of approximately $4.1 million applied to external research and development and clinical program costs, approximately $3.0 million applied to salaries and wages, approximately $1.0 million in general and administrative consultants and contractors and approximately $3.7 million in legal and other professional fees, partially offset by financing cash inflows from the sale of $10 million of equity to Baxter in 2014. The $4.1 million applied to external research and development and clinical program costs primarily related to our ErepoXen® and OncoHist™ drug candidates. The $3.7 million legal and other professional fees cash outflows in 2014 includes $1.9 million of costs that were incurred during 2013 but paid in 2014. Based on current cash on hand at the date of filing this Annual Report, we estimate we have sufficient funds to continue operations through the end of April 2015.

We have historically relied principally upon equity financing to fund our operations. Since 2005 we have raised approximately $47 million in equity financing, including $10 million from the sale of shares to Baxter in January 2014. From 2005 to date the Company also generated approximately $10 million from fee-for-service and license milestone revenues; however, the Company is not currently engaged in any fee-for service activities; consequently we expect that the majority of any new funding raised in the foreseeable future will arise from a combination of:

(a) In the immediate short term, by the raising of bridge financing through such means as may be open to us;
(b) Within the current fiscal year, by the issuance of new capital through the form of an S-1 Registration Statement or private investment in public equity financing;
(c) Within 12-18 months by the out-licensing of one of more product candidates or technologies;
(d) In the longer term, from the receipt of "milestone payments" vested in the important Baxter product license for their PSA-Factor VIII product candidate

In relation to these possible sources of new capital/cash:

i. We are presently working with multiple parties investigating the raising of additional working capital through either a convertible debt or convertible preferred stock instrument, this by way of a bridge financing.

   More specifically, we are currently finalizing terms associated with entering into a Securities Purchase Agreement whereby the Company will issue up to an aggregate of $3 million of Senior Secured Collateralized Convertible Promissory Notes (the "Notes"), with a third party, which should generate cash proceeds of approximately $2.8 million, net of costs. We estimate the sale of the Notes will provide enough working capital to fund our business through September 2015. Arrangements are being put in place for management and others to provide loan capital independent of the planned bridge financing noted above sufficient to extend the cash "runway" of the Company to at least May 31, 2015; such funding may also be made available alongside the proposed bridge.

ii. Management is currently taking steps to raise additional working capital in the form of a planned underwritten registered public offering of debt or equity, or a combination of debt and equity. The Company has engaged an investment banker to advise and assist with this planned underwritten public offering, which it hopes to complete by September 30, 2015. The Company has presented its business plan to potential investors, and, based upon the progress of continuing discussions with them, is optimistic it will raise sufficient working capital to meet its obligations through April 30, 2016. The Company needs to raise additional net new capital of a minimum of $9 million prior to September 2015 in order to fund its planned operations through April 30, 2016.

iii. We have also now initiated the process necessary for the out-licensing of our ErepoXen® product candidate, currently in the latter stage of its Phase II(a) clinical trial in Australia.

iv. While we have no direct control over the timing of the matter, we have been guided that Baxter hopes to enter Phase I human clinical trials for its PSA-Factor VIII product candidate within 12-18 months. However, no related milestone payments will arise until completion of the relevant clinical advances which cannot be precisely determined at this time.

There can be no assurance that we will be successful in our efforts to raise additional working capital by way of a bridge financing, or on any future equity transaction or, even if we are successful, that we will be able to do so on commercially reasonable terms. Further, due to the uncertainties inherent in the clinical research process and unknown future market conditions, there can be no assurance that either our ErepoXen® candidate will lead to any future fees or that Baxter itself will be successful in initiating human clinical trials in the estimated timeframe or that the underlying product will meet the clinical milestones necessary to trigger any payment to the Company under the terms of our license agreement with them.

While the financial statements have been prepared on a going concern basis, if we do not successfully conclude the planned bridge financing during April 2015 and the planned follow on public offering by September 2015, there is no assurance that we would be able to continue planned operations and these condition raise substantial doubt about our ability to continue as a going concern. Under such circumstances, we would have to further reduce the planned scale of, or possibly suspend, all of our pre-clinical development initiatives and clinical trials delivered by external service providers. In addition, we would have to reduce general and administrative expenses, and delay or cease the purchase of clinical research services until we are able to obtain additional financing. The recoverability and classification of the Company's intangible assets and goodwill could also be adversely affected.

**Cash Flows Used in Operating Activities**

Cash flows used in operating activities for the year ended December 31, 2014 totaled approximately $12.3 million. The $12.3 million includes net operating cash uses of approximately $7.00 million in consulting, legal and other professional service fees, approximately $3.01 million in salaries and wages, including scientific staff, and approximately $1.80 million in program-specific clinical development costs.

Cash flows used in operating activities for the year ended December 31, 2013 totaled approximately $6.05 million, which includes net operating cash uses of approximately $7.05 million, partially offset by $1 million in payments received from Baxter. The $7.05 million includes approximately $2.42 million in salaries and wages, including scientific staff, and $1.45 million in program-specific clinical development costs.

**Cash Flows from Investing Activities**

Cash flows used in investing activities for the year ended December 31, 2014 included approximately $58,000 from the purchase of assets consisting of office furniture and fixtures and laboratory equipment, partially offset by approximately $5,500 derived from the disposition of certain property and equipment during the year.

Cash flows used in investing activities for the year ended December 31, 2013 included approximately $79,000 from the purchase of assets consisting of office furniture and fixtures and laboratory equipment. During 2013, we restricted $66,000 in cash as a guarantee of the Company's obligations under non-cancelable lease obligations.

**Cash Flow from Financing Activities**

For the year ended December 31, 2014 we received $10 million in proceeds in exchange for the issuance of approximately 10.7 million shares of common stock to Baxter and we received approximately $102,000 in proceeds in connection with the exercise of stock options by the CEO of the company. The proceeds were applied toward our working capital needs during the year. During the year, we repaid approximately $286,000 on our loan to an affiliate of the Company.

For the year ended December 31, 2013 we had no significant sources or uses of funds from financing activities.

**Off Balance Sheet Arrangements**

The Company has no off balance sheet financing arrangements. The Company has two facility lease obligations and written employment agreements with three key employees.

**Recent Accounting Pronouncements**

In August 2014, the Financial Accounting Standard Board (FASB) issued ASU 2014-15, *Presentation of Financial Statements – Going Concern* (Subtopic 205-40) ("ASU 2014-15"). ASU 2014-15 defines management's responsibility to evaluate whether there is substantial doubt about an organization's ability to continue as a going concern and provides guidance on the related footnote disclosures. This guidance is effective for annual reporting periods beginning after December 15, 2016, and interim periods within annual periods beginning after December 15, 2016. Early application is permitted. We are currently evaluating the impact of this new standard.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606) ("ASU 2014-09"). ASU 2014-09 supersedes the revenue recognition requirements in ASC Topic 605, *Revenue Recognition*, and most industry-specific guidance. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods or services. This guidance is effective for annual reporting periods beginning after December 15, 2016, including interim periods within that reporting period, under either full or modified retrospective approach. Early application is not permitted. We are currently evaluating the impact of this new standard on its revenue recognition policy.

We have considered other recent accounting pronouncements and determined that they are either not applicable to our business or that no material effect is expected on the consolidated financial statements as a result of future adoption.

**ITEM 7A – QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

We are not required to provide the information required by this Item because we are a smaller reporting company.

**ITEM 8 – FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**


| | |
|---|---|
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| Consolidated Balance Sheets as of December 31, 2014 and 2013 | F-2 |
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## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Shareholders of Xenetic Biosciences, Inc.

We have audited the accompanying consolidated balance sheets of Xenetic Biosciences, Inc. (the "Company") as of December 31, 2014 and 2013, and the related consolidated statements of comprehensive loss, changes in stockholders' equity, and cash flows for each of the two years in the period ended December 31, 2014. Our audits also include the financial statement schedule. These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. We were not engaged to perform an audit of the Company's internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Xenetic Biosciences, Inc. at December 31, 2014 and 2013, and the consolidated results of its operations and its cash flows for each of the two years in the period ended December 31, 2014, in conformity with US generally accepted accounting principles. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As disclosed in Note 1 to the Financial Statements, the Company's recurring losses from operations and its requirement to raise funds to continue operations beyond April 2015, raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The 2014 consolidated financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classification of liabilities that may result from the outcome of this uncertainty.

/s/ Ernst & Young LLP

Reading, United Kingdom

April 15, 2015

**XENETIC BIOSCIENCES, INC.**
**CONSOLIDATED BALANCE SHEETS**

| | December 31, 2014 | December 31, 2013 |
|---|---|---|
| ASSETS | | |
| Current assets: | | |
| Cash | $ 2,507,401 | $ 4,839,486 |
| Restricted cash | 66,000 | 66,000 |
| Other receivables | 115,775 | 256,015 |
| Prepaid expenses and other | 88,237 | 168,308 |
| Total current assets | 2,777,413 | 5,329,809 |
| | | |
| Property and equipment, net | 119,449 | 152,603 |
| Goodwill | 3,465,157 | 3,665,199 |
| Indefinite-lived intangible assets | 9,754,857 | 10,318,001 |
| Other assets | 199,270 | – |
| | | |
| Total assets | $ 16,316,146 | $ 19,465,612 |
| | | |
| LIABILITIES AND STOCKHOLDERS' EQUITY | | |
| Current liabilities: | | |
| Accounts payable | $ 852,760 | $ 942,156 |
| Accrued expenses | 1,409,691 | 1,826,867 |
| Accrued payroll taxes | – | 84,599 |
| Other current liabilities | 41,472 | 55,266 |
| Loans due to related parties | 395,000 | 681,124 |
| Total current liabilities | 2,698,923 | 3,590,012 |
| Deferred tax liability | 3,080,097 | 3,257,910 |
| Other liabilities | 56,383 | – |
| | | |
| Total liabilities | 5,835,403 | 6,847,922 |
| Commitments and contingent liabilities | – | – |
| | | |
| Stockholders' equity: | | |
| Common stock, $0.01 par value; 215,456,000 shares authorized as of December 31, 2014 and 2013; 149,985,476 and 130,575,516 shares issued as of December 31, 2014 and 2013, respectively; 139,297,282 and 119,887,322 shares outstanding as of December 31, 2014 and 2013, respectively | 1,499,855 | 1,305,755 |
| Additional paid in capital | 89,310,820 | 73,999,860 |
| Accumulated deficit | (75,624,428) | (58,306,999) |
| Accumulated other comprehensive income | 575,676 | 900,254 |
| Treasury stock | (5,281,180) | (5,281,180) |
| Total stockholders' equity | 10,480,743 | 12,617,690 |
| | | |
| Total liabilities and stockholders' equity | $ 16,316,146 | $ 19,465,612 |

The accompanying notes are an integral part of these consolidated financial statements.

**XENETIC BIOSCIENCES, INC.**
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**

| | YEAR ENDED DECEMBER 31, | |
|---|---|---|
| | **2014** | **2013** |
| Revenue | $ – | $ 1,000,000 |
| Cost of revenue | – | – |
| Gross profit | – | 1,000,000 |
| | | |
| Operating costs and expenses: | | |
| Research and development | 6,323,896 | 3,082,384 |
| General and administrative | 6,600,870 | 6,464,908 |
| | 12,924,766 | 9,547,292 |
| | | |
| Loss from operations | (12,924,766) | (8,547,292) |
| | | |
| Other income (expense): | | |
| Loss on disposal of subsidiaries | (1,069,675) | – |
| Other income (expense) | (326,916) | (66,177) |
| Interest income | 18,959 | 34,855 |
| Interest expense | (4,706) | (632) |
| | (1,382,338) | (31,954) |
| | | |
| Loss before income taxes | $ (14,307,104) | $ (8,579,246) |
| Income tax | – | – |
| | | |
| Net loss | $ (14,307,104) | $ (8,579,246) |
| | | |
| Other comprehensive income (loss) | | |
| Foreign currency translation adjustment | (324,578) | (15,344) |
| | | |
| Total comprehensive loss | $ (14,631,682) | $ (8,594,590) |
| | | |
| Net loss per share of common stock, basic and diluted | $ (0.11) | $ (0.07) |
| Weighted-average shares of common stock outstanding, basic and diluted | 135,896,022 | 119,831,943 |

The accompanying notes are an integral part of these consolidated financial statements.

**XENETIC BIOSCIENCES, INC.**
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

| | YEAR ENDED DECEMBER 31, | |
|---|---|---|
| | **2014** | **2013** |
| **CASH FLOWS FROM OPERATING ACTIVITIES:** | | |
| Net Loss | $ (14,307,104) | $ (8,579,246) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Depreciation and amortization | 88,689 | 52,032 |
| Share-based compensation | 702,042 | 431,504 |
| Loss on disposal of subsidiaries | 1,069,675 | – |
| Fee paid on disposal of subsidiaries | (430,000) | – |
| Non-cash issuance of common stock | 811,196 | – |
| Non-cash issuance of warrants | 239,889 | – |
| Foreign currency translation | – | (14,965) |
| Changes in operating assets and liabilities: | | |
| Accounts receivables, prepayments and other receivables | (24,468) | (7,519) |
| Accounts payable, accrued expenses and other liabilities | (479,015) | 2,066,172 |
| Net cash used in operating activities | (12,329,096) | (6,052,022) |
| **CASH FLOWS FROM INVESTING ACTIVITIES:** | | |
| Purchases of property and equipment | (57,669) | (78,634) |
| Disposition of property and equipment | 5,487 | – |
| Cash acquired from Acquisition | 43,502 | – |
| Cash transferred in connection with Hive Out Agreement | (43,502) | – |
| Change in restricted cash | – | (66,000) |
| Net cash used in investing activities | (52,182) | (144,634) |
| **CASH FLOWS FROM FINANCING ACTIVITIES:** | | |
| Proceeds from issuance of common stock | 10,000,000 | – |
| Proceeds from exercise of stock options | 101,933 | 2,090 |
| Payments on loan from related party | (286,124) | – |
| Net cash provided by financing activities | 9,815,809 | 2,090 |
| Effect of exchange rate change on cash and cash equivalents | 233,384 | (102,818) |
| Net decrease in cash and cash equivalents, excluding restricted cash | (2,332,085) | (6,297,384) |
| Cash and cash equivalents at beginning of period | 4,839,486 | 11,136,870 |
| Cash and cash equivalents at end of period | $ 2,507,401 | $ 4,839,486 |
| **SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:** | | |
| Cash paid for interest | $ 4,706 | $ – |
| Cash paid for income taxes | $ – | $ – |
| **SUPPLEMENTAL SCHEDULE OF NON-CASH INVESTING AND FINANCING ACTIVITIES:** | | |
| Equity consideration transferred in the Acquisition | $ 3,750,000 | $ – |
| Repurchase and cancellation of common stock in disposal of subsidiaries | $ (3,750,000) | $ – |

The accompanying notes are an integral part of these consolidated financial statements.

**XENETIC BIOSCIENCES, INC.**
**CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY**

| | Common Stock | | | | | | |
|---|---|---|---|---|---|---|---|
| | Number of Shares | Par Value ($0.01) | Additional Paid in Capital | Accumulated Deficit | Accumulated Other Comprehensive Income (Loss) | Treasury Stock | Total Stockholders' Equity |
| **Balance as of January 1, 2013** | 130,520,137 | $ 1,305,201 | $ 73,566,820 | $ (49,727,753) | $ 915,598 | $ (5,281,180) | $ 20,778,686 |
| Exercise of stock options | 55,379 | 554 | 1,536 | – | – | – | 2,090 |
| Share-based compensation | – | – | 431,504 | – | – | – | 431,504 |
| Net loss | – | – | – | (8,579,246) | – | – | (8,579,246) |
| Foreign currency translation | – | – | – | – | (15,344) | – | (15,344) |
| **Balance as of December 31, 2013** | 130,575,516 | $ 1,305,755 | $ 73,999,860 | $ (58,306,999) | $ 900,254 | $ (5,281,180) | $ 12,617,690 |
| Exercise of stock options | 1,984,080 | 19,841 | 82,092 | – | – | – | 101,933 |
| Issuance of common stock | 13,939,971 | 139,400 | 10,671,796 | – | – | – | 10,811,196 |
| Issuance of warrants | | | 239,889 | – | – | – | 239,889 |
| Deemed issuance of shares in reverse merger | 13,500,000 | 135,000 | 3,615,000 | – | – | – | 3,750,000 |
| Repurchase and cancellation of shares in Hive Out Agreement | (10,000,000) | (100,000) | – | (3,010,325) | – | – | (3,110,325) |
| Repurchase and cancellation of shares in Acquisition | (14,091) | (141) | 141 | – | – | – | – |
| Share-based compensation | – | – | 702,042 | – | – | – | 702,042 |
| Net loss | – | – | – | (14,307,104) | – | – | (14,307,104) |
| Foreign currency translation | – | – | – | – | (324,578) | – | (324,578) |
| **Balance as of December 31, 2014** | 149,985,476 | $ 1,499,855 | $ 89,310,820 | $ (75,624,428) | $ 575,676 | $ (5,281,180) | $ 10,480,743 |

The accompanying notes are an integral part of these consolidated financial statements.

## 1. The Company

***Background***

Xenetic Biosciences, Inc. (the "Company"), incorporated in the state of Nevada and based in Lexington, Massachusetts, is a clinical stage biopharmaceutical company that is focused on the discovery, development and planned commercialization of a new generation of human drug therapies for the treatment of a variety of conditions including anemia, refractory Acute Myeloid Leukemia, Cystic Fibrosis and certain cancers based upon its proprietary and patented drug delivery platform systems and drug development collaborations with major third party pharmaceutical companies around the world.

The Company's drug delivery platform systems include PolyXen® for creating next generation biologic drugs by extending the efficacy, safety and half-life of existing biologic drugs, OncoHist™ for the development of novel oncology drug therapies focused on orphan indications in humans and ImuXen® for the development of vaccines that can simultaneously deliver multiple active pharmaceutical ingredients. The Company is also developing a broad pipeline of drug candidates for next generation biologics and novel oncology therapeutics in a number of orphan disease indications.

With the Company's relocation to the United States from the United Kingdom, the Company, having historically been a research organization, is now focused on employing United States based drug development expertise leveraging off its 140 issued patents and 90 patent applications to develop a proprietary drug pipeline of next generation products. All the rights over the Company's patents and licenses are controlled in the United Kingdom.

***Going Concern***

At December 31, 2014 and 2013 the Company had approximately $78,000 and $1.7 million of working capital (current assets minus current liabilities), respectively. At December 31, 2014, the Company had approximately $2.5 million in cash and $2.7 million in total current liabilities, which includes $395,000 due to an affiliate of the Company, which the Company does not expect to repay prior to a registered equity offering by the Company, and balances of approximately $635,000 currently disputed by the Company. At December 31, 2013, the Company had cash and current liabilities of $4.8 million and $3.6 million, respectively. The Company's working capital has been reduced in 2014 due to its net loss of $14.3 million that includes $12.3 million net cash used in operating activities comprised of approximately $4.1 million applied to external research and development and clinical program costs, approximately $3.0 million applied to salaries and wages, approximately $1.0 million in general and administrative consultants and contractors and approximately $3.7 million in legal and other professional fees, partially offset by financing cash inflows from the sale of $10 million of equity to Baxter in 2014. The $4.1 million applied to external research and development and clinical program costs primarily related to the Company's ErepoXen® and OncoHist™ drug candidates. The $3.7 million legal and other professional fees cash outflows in 2014 includes $1.9 million of costs that were incurred during 2013 but paid in 2014. Based on current cash on hand at the date of filing this Annual Report, the Company estimates it has sufficient funds to continue operations through the end of April 2015.

The Company has historically relied principally upon equity financing to fund its operations. Since 2005 the Company has raised approximately $47 million in equity financing, including $10 million from the sale of shares to Baxter in January 2014. From 2005 to date the Company also generated approximately $10 million from fee-for-service and license milestone revenues; however, the Company is not currently engaged in any fee-for service activities; consequently the Company expects that the majority of any new funding raised in the foreseeable future will arise from a combination of:

(a) In the immediate short term, by the raising of bridge financing through such means as may be open to the Company;
(b) Within the current fiscal year, by the issuance of new capital through the form of an S-1 Registration Statement or private investment in public equity financing;
(c) Within 12-18 months by the out-licensing of one of more product candidates or technologies;
(d) In the longer term, from the receipt of "milestone payments" vested in the important Baxter product license for their PSA-Factor VIII product candidate.

In relation to these possible sources of new capital/cash:

i. The Company is presently working with multiple parties investigating the raising of additional working capital through either a convertible debt or convertible preferred stock instrument, this by way of a bridge financing.

   More specifically, the Company is currently finalizing terms associated with entering into a Securities Purchase Agreement whereby the Company will issue up to an aggregate of $3 million of Senior Secured Collateralized Convertible Promissory Notes (the "Notes"), with a third party, which should generate cash proceeds of approximately $2.8 million, net of costs. The Company estimates the sale of the Notes will provide enough working capital to fund its business through September 2015. Arrangements are being put in place for management and others to provide loan capital independent of the planned bridge financing noted above sufficient to extend the cash "runway" of the Company to at least May 31, 2015; such funding may also be made available alongside the proposed bridge.

ii. Management is currently taking steps to raise additional working capital in the form of a planned underwritten registered public offering of debt or equity, or a combination of debt and equity. The Company has engaged an investment banker to advise and assist with this planned underwritten public offering, which it hopes to complete by September 30, 2015. The Company has presented its business plan to potential investors, and, based upon the progress of continuing discussions with them, is optimistic it will raise sufficient working capital to meet its obligations through April 30, 2016. The Company needs to raise additional net new capital of a minimum of $9 million prior to September 2015 in order to fund its planned operations through April 30, 2016.

iii. The Company has also now initiated the process necessary for the out-licensing of our ErepoXen® product candidate, currently in the latter stage of its Phase II(a) clinical trial in Australia.

iv. While the Company has no direct control over the timing of the matter, the Company has been guided that Baxter hopes to enter Phase I human clinical trials for its PSA-Factor VIII product candidate within 12-18 months. However, no related milestone payments will arise until completion of the relevant clinical advances which cannot be precisely determined at this time.

There can be no assurance that the Company will be successful in our efforts to raise additional working capital by way of a bridge financing, or on any future equity transaction or, even if the Company is successful, that the Company will be able to do so on commercially reasonable terms. Further, due to the uncertainties inherent in the clinical research process and unknown future market conditions, there can be no assurance that either the Company's ErepoXen® candidate will lead to any future fees or that Baxter itself will be successful in initiating human clinical trials in the estimated timeframe or that the underlying product will meet the clinical milestones necessary to trigger any payment to the Company under the terms of its license agreement with them.

While the financial statements have been prepared on a going concern basis, if the Company does not successfully conclude the planned bridge financing during April 2015 and the planned follow on public offering by September 2015, there is no assurance that the Company would be able to continue planned operations and these conditions raise substantial doubt about its ability to continue as a going concern. Under such circumstances, the Company would have to further reduce the planned scale of, or possibly suspend, all of its pre-clinical development initiatives and clinical trials delivered by external service providers. In addition, the Company would have to reduce general and administrative expenses, and delay or cease the purchase of clinical research services until the Company is able to obtain additional financing. The recoverability and classification of the Company's intangible assets and goodwill could also be adversely affected.

***Recent Significant Transaction***

On January 23, 2014, the Company consummated a reverse merger (the "Acquisition") pursuant to a written plan of reorganization, in which the Company merged with Xenetic Biosciences (UK) Limited (formerly Xenetic Biosciences plc) ("Xenetic UK"), a company incorporated in England and Wales under the Companies Act of 1985, such that Xenetic UK became a wholly owned subsidiary of the Company. Upon completion of the Acquisition, the Company acquired all issued and outstanding shares of capital stock of Xenetic UK. As a result, 132,545,504 shares of the Company's common stock were newly issued and, immediately following the Acquisition, there were 136,045,504 shares of common stock issued and outstanding. At that time, because former Xenetic UK shareholders owned approximately 97% of the combined company on a fully diluted basis and all members of the combined company's executive management were from Xenetic UK, Xenetic UK was deemed to be the acquiring company for accounting purposes and the transaction was accounted for as a reverse acquisition in accordance with accounting principles generally accepted in the United States ("US GAAP").

Prior to the Acquisition, the Company changed its name from General Sales and Leasing, Inc. to Xenetic Biosciences, Inc. As used in these consolidated financial statements, unless otherwise indicated, all references herein to "Xenetic", the "Company", "we" or "us" refer to Xenetic Biosciences, Inc. and its wholly owned subsidiaries.

## 2. Summary of Significant Accounting Policies

***Preparation of Financial Statements***

These financial statements have been prepared on the assumption that the Company will be able to realize its assets and discharge its liabilities in the normal course of business. This assumption is presently in question and contingent upon the Company's ability to raise additional working capital. The financial statements do not include any adjustments relating to recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might be necessary should the Company be unable to continue as a going concern.

Certain research and development and general and administrative expense classifications for the year ended December 31, 2013 on the consolidated statement of comprehensive loss have been reclassified to conform to the current period presentation. In addition, certain property and equipment classifications as of December 31, 2013 have been reclassified to conform to the current period presentation.

***Principles of Consolidation***

The financial statements of the Company include the accounts of Xenetic UK and its wholly owned subsidiaries: Lipoxen Technologies Limited ("Lipoxen"), Xenetic Bioscience, Incorporated, and SymbioTec GmbH ("SymbioTec"). All material intercompany balances and transactions have been eliminated on consolidation.

In accordance with the reverse acquisition guidance in Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 805 *Business Combinations* ("ASC 805"), the consolidated financial statements for the year ended December 31, 2013 of the Company (the accounting acquiree) are a continuation of the financial statements of Xenetic UK (the accounting acquirer), adjusted to retroactively change Xenetic UK's legal capital to reflect the legal capital of the Company. This adjustment was calculated based upon the share exchange ratio of 56 new shares of Company common stock for every whole 175 shares of Xenetic UK capital stock previously issued and outstanding. Comparative information preserved in these consolidated financial statements is also retroactively adjusted to reflect the legal capital of the Company. The legal capital at December 31, 2014 reflects the legal capital of the Company after the Acquisition date and therefore requires no adjustment.

***Use of Estimates***

The preparation of the financial statements in accordance with US GAAP requires management to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities, the reported amounts of revenue and expenses in the financial statements and disclosures in the accompanying notes. Actual results and outcomes may differ materially from management's estimates, judgments and assumptions.

***Fair Value of Financial Instruments***

ASC Topic 820 *Fair Value Measurement* defines fair value as the price that would be received to sell an asset or be paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Company applies the following fair value hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement. Level 1 inputs are quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 utilizes quoted market prices in markets that are not active, broker or dealer quotations, or alternative pricing sources with reasonable levels of price transparency. Level 3 inputs are unobservable inputs for the asset or liability in which there is little, if any, market activity for the asset or liability at the measurement date.

The Company's cash and cash equivalents and restricted cash are measured at fair value on a recurring basis and classified as Level 1 in the fair value hierarchy because they are valued using quoted prices for the years ended December 31, 2014 and 2013. The carrying amount of certain of the Company's financial instruments approximate fair value due to their short maturities.

***Cash, Cash Equivalents and Investments***

The Company considers all highly liquid investments with maturities of 90 days or less from the date of purchase to be cash equivalents. Investments with original maturities of greater than 90 days from the date of purchase but less than one year from the balance sheet date are classified as short-term investments, while investments with maturities of one year or beyond from the balance sheet date are classified as long-term investments. Management determines the appropriate classification of its cash equivalents and investment securities at the time of purchase and re-evaluates such determination as of each balance sheet date.

***Restricted Cash***

As of December 31, 2014, restricted cash represents a certificate of deposit that matures annually, and secures the Company's outstanding letter of credit of $66,000 for the operating lease for new office and laboratory space in Lexington, Massachusetts. The letter of credit is required to be maintained through the term of the lease, which expires in January 2019.

***Concentration of Credit Risk***

Financial instruments that subject the Company to concentrations of credit risk include cash and cash equivalents. The Company maintains cash and cash equivalents with various major financial institutions. The Company performs periodic evaluations of the relative credit standing of these financial institutions and limits the amount of credit exposure with any one institution.

***Property and Equipment***

The Company records property and equipment at cost less accumulated depreciation. Expenditures for major renewals and improvements which extend the life or usefulness of the asset are capitalized. Items of an ordinary repair or maintenance nature are charged directly to operating expense as incurred. The Company periodically reviews the estimated useful lives assigned to property and equipment, and the Company changes its estimates to reflect the results of those reviews. During the first quarter of 2014, the Company completed such a review and, as a result, decreased the estimated useful lives of laboratory and office and computer equipment from four years to three years. Separately, the estimated useful lives of furniture and fixtures and leasehold improvements was increased from four years to five years. The effect of this change in estimate for the year ended December 31, 2014 is not material to the Company's financial position or results of operations.

The Company calculates depreciation using the straight-line method over the estimated useful lives of the assets:

| Asset Classification | **Estimated Useful Life** |
|---|---|
| Laboratory equipment | 3 years |
| Office and computer equipment | 3 years |
| Leasehold improvements | 5 years or the remaining term of the lease, if shorter |
| Furniture and fixtures | 5 years |

The Company eliminates the cost of assets retired or otherwise disposed of, along with the corresponding accumulated depreciation, from the related accounts, and the resulting gain or loss is reflected in the results of operations.

***Indefinite-Lived Intangible Assets***

Acquired indefinite-lived intangible assets consist of In-Process Research and Development ("IPR&D") related to the Company's business combination with SymbioTec, which were recorded at fair value on the acquisition date. IPR&D intangible assets are considered indefinite-lived intangible assets until completion or abandonment of the associated research and development efforts. Substantial additional research and development may be required before the Company's IPR&D reaches technological feasibility. Upon completion of the IPR&D project, the IPR&D assets will be amortized over their estimated useful lives.

In accordance with ASC Topic 350 *Intangibles - Goodwill and Other* ("ASC 350"), the Company assesses intangible assets with indefinite lives for impairment at least annually as of October 1, or when events or changes in the business environment indicate the carrying value may not be fully recoverable. The Company also has the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to the determination that it is more likely than not (that is, a likelihood of more than 50%) that the acquired IPR&D is impaired. If the Company chooses to first assess the qualitative factors and it is determined that it is not more likely than not acquired IPR&D is impaired, the Company is not required to take further action to test for impairment. The Company also has the option to bypass the qualitative assessment and perform only the quantitative impairment test, which the Company may choose to perform in some periods but not in others.

The determinations as to whether, and, if so, the extent to which, acquired IPR&D become impaired are highly judgmental and based on significant assumptions regarding the probability of success and the timing of projected cash flows, projected future financial condition and operating results, changes in the manner of the use and development of the acquired assets, the Company's overall business strategy, and regulatory, market and economic environment and trends. No impairment was recorded during the years ended December 31, 2014 or 2013.

***Goodwill***

Goodwill is comprised of the purchase price of business combinations in excess of the fair value assigned at acquisition to the net tangible and identifiable intangible assets acquired. See Note 3, *Acquisitions*, for further information on the goodwill activity related to the Acquisition and the subsequent disposal of subsidiaries. Goodwill is not amortized, but in accordance with ASC 350, the Company assesses goodwill for impairment at least annually, or when events or changes in the business environment indicate the carrying value may not be fully recoverable. The Company also has the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to the determination that it is more likely than not (that is, a likelihood of more than 50%) that goodwill is impaired. If the Company chooses to first assess qualitative factors and it is determined that it is not more likely than not goodwill is impaired, the Company is not required to take further action to test for impairment. The Company also has the option to bypass the qualitative assessment and perform only the quantitative impairment test, which the Company may choose to do in some periods but not in others. The Company performs its annual impairment review as of October 1.

In addition, the Company assesses market conditions, industry developments and internal operations to determine if events or changes in the business environment indicate the carrying value of goodwill may not be fully recoverable. No impairment was recorded during the years ended December 31, 2014 or 2013.

***Impairment of Long-Lived Assets***

In accordance with ASC Topic 360 *Property, Plant and Equipment*, the Company reviews long-lived assets to be held and used, including property and equipment, for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets or asset group may not be fully recoverable. No such impairments were recorded during the years ended December 31, 2014 or 2013.

Evaluation of recoverability is based on an estimate of undiscounted future cash flows resulting from the use of the asset or asset group and its eventual disposition. Impairment, if any, is calculated as the amount by which an asset's carrying value exceeds its fair value, typically using discounted cash flows to determine fair value.

***Foreign Currency Translation***

The Company's reporting currency is United States ("US") dollars. During the years ended December 31, 2014 and 2013, the Company had operations in the United Kingdom ("UK"), US and Germany. The functional currencies of the operations in the UK, US and Germany are their local currencies: British pounds sterling, US dollars and euros, respectively. Assets and liabilities of foreign operations are translated to US dollars at the exchange rate in effect at the balance sheet date and revenue and expenses at the average exchange rate for the period. Gains and losses from the translation of the consolidated financial statements of foreign subsidiaries into US dollars are included in stockholders' equity as a component of other comprehensive income. The Company does not record tax provisions or benefits for the net changes in foreign currency translation adjustments, as the company intends to permanently reinvest undistributed earnings in its foreign subsidiaries. Realized and unrealized gains and losses resulting from foreign currency transactions arising from exchange rate fluctuations on balances denominated in currencies other than the functional currencies, are recognized in "Other (expense) income" in the consolidated statements of comprehensive loss. Monetary assets and liabilities that are denominated in a currency other than the functional currency are re-measured to the functional currency using the exchange rate at the balance sheet date and gains or losses are recorded in "Other (expense) income" in the consolidated statements of comprehensive loss.

***Revenue Recognition***

The Company enters into supply, license and collaboration arrangements with pharmaceutical and biotechnology partners, some of which include royalty agreements based on potential net sales of approved commercial pharmaceutical products. The Company recognizes revenue in accordance with the authoritative guidance, ASC Topic 605, *Revenue Recognition*. The Company recognizes revenue when all of the following criteria are met: (i) persuasive evidence of an arrangement exists, (ii) delivery (or passage of title) has occurred or services have been rendered, (iii) the seller's price to the buyer is fixed or determinable, and (iv) collectability is reasonably assured.

*License, collaboration and other*

The terms of the Company's license agreements include delivery of an Intellectual Property ("IP") license to a collaboration partner. The Company may be compensated under license arrangements through a combination of non-refundable upfront payments, development and regulatory objective payments and royalty payments on future product sales by partners. Non-refundable upfront payments and development and regulatory objective payments received by the Company in license and collaboration arrangements that include future obligations, such as supply obligations, are recognized ratably over the Company's expected performance period under each respective arrangement. The Company makes its best estimate of the period over which the Company expects to fulfil the Company's performance obligations, which may include technology transfer assistance, research activities, clinical development activities, and manufacturing activities from development through the commercialization of the product. Given the uncertainties of these collaboration arrangements, significant judgment is required to determine the duration of the performance period. Non-refundable upfront license fees received, whereby continued performance or future obligations are considered inconsequential or perfunctory to the relevant licensed technology, are recognized as revenue upon delivery of the technology.

The Company expects to recognize royalty revenue in the period of sale, based on the underlying contract terms, provided that the reported sales are reliably measurable and the Company has no remaining performance obligations, assuming all other revenue recognition criteria are met.

Reimbursements for research and development services completed by the Company related to the collaboration agreements are recognized in operations as revenue on a gross basis.

The Company's license and collaboration agreements with certain collaboration partners could also provide for future payments to the Company based solely upon the performance of the respective collaboration partner in consideration of deadline extensions or upon the achievement of specified sales volumes of approved drugs. For such payments, the Company expects to recognize the payments as revenue when earned under the applicable contract terms on a performance basis or ratably over the term of the agreement. These payments may also be recognized as revenue when continued performance or future obligations by the Company are considered inconsequential or perfunctory.

Refer to Note 4, *Significant Strategic Drug Development Collaborations*, for discussion on arrangements with specific collaboration partners.

***Research and Development Expenses***

Research and development expenses consist of expenses incurred in performing research and development activities, including compensation and benefits, facilities expenses, overhead expenses, clinical trial and related clinical manufacturing expenses, fees paid to Clinical Research Organizations and Clinical Manufacturing Organizations and other outside expenses. The Company expenses research and development costs as incurred. The Company expenses upfront, non-refundable payments made for research and development services as obligations are incurred. The value ascribed to intangible assets acquired but which have not met capitalization criteria is expensed as research and development at the time of acquisition.

***Share-Based Compensation***

*Stock options*

The Company grants share-based payments in the form of options to employees and non-employees, Joint Share Ownership Plan ("JSOP") awards to employees, as well as agreements to issue common stock in exchange for services provided by non-employees. The Company measures share-based payments in accordance with ASC Topic 718, *Compensation – Stock Compensation.*

Stock option compensation expenses are based on the fair value of the underlying option calculated using the Black-Scholes option pricing model. Determining the appropriate fair value model and related assumptions requires judgment, including estimating share price volatility and expected terms of the awards. The expected volatility rates are estimated based on the actual volatility of the Company and of comparable public companies over the expected term. The expected terms represent the time that options are expected to be outstanding. The Company estimates forfeitures at the time of grant and revises those estimates in subsequent periods if actual forfeitures differ from those estimates. The Company has not paid dividends and does not anticipate paying cash dividends in the foreseeable future and, accordingly, uses an expected dividend yield of zero. The risk-free interest rate is based on the rate of US Treasury securities with maturities consistent with the estimated expected term of the awards. Upon exercise, stock options are redeemed for newly issued shares of common stock.

For employee options that vest based solely on service conditions, the fair value measurement date is generally on the date of grant and the related compensation expense, less expense for expected forfeitures, is recognized on a straight-line basis over the requisite vesting period of the awards. For non-employee options, the fair value measurement date is the earlier of the date the performance of services is complete or the date the performance commitment has been reached. The Company generally determines that the fair value of the stock options is more reliably measurable than the fair value of the services received. Compensation expense related to stock options granted to non-employees that vest based solely on service conditions is subject to re-measurement at each reporting period until the options vest and is recognized on a straight-line basis over the requisite vesting period of the awards.

*Common stock awards*

The Company grants common stock awards to non-employees in exchange for services provided. The Company generally measures the fair value of these awards using the fair value of the services provided as it is a more reliable measure of the fair value of the awards. The fair value measurement date of these awards is generally the date the performance of services is complete. The fair value of the awards is recognized on a straight-line basis as services are rendered. The share-based compensation related to common stock awards for the settlement of services provided by non-employees is recorded on the consolidated statement of comprehensive loss in the same manner and charged to the same account as if such settlements had been made in cash.

*Joint Share Ownership Plan awards*

The Company measures the fair value of JSOP awards using Monte Carlo simulations based on the terms of the plan, which includes vesting conditions based on the achievement of certain market conditions in the form of share price hurdles. Accordingly, the Company recognizes compensation expense related to its JSOP awards using a graded vesting model. Determination of the appropriate fair value model and related assumptions requires judgment, including estimating share price volatility and the expected term of the awards.

***Warrants***

In connection with certain financing and collaboration arrangements, the Company issues warrants to purchase shares of its common stock to its collaborative partners. The outstanding warrants are standalone instruments that are not puttable or mandatorily redeemable by the holder and are classified as equity awards. The Company measures the fair value of the awards using the Black-Scholes option pricing model as of the measurement date. Warrants issued to collaboration partners in conjunction with the issuance of common stock are recorded at fair value as a reduction in additional paid-in capital of the common stock issued. All other warrants are recorded at fair value as compensation expense over the requisite service period or at the date of issuance, if there is not a service period. Warrants granted in connection with ongoing arrangements are more fully described in Note 9, *Stockholders' Equity.*

***Income Taxes***

The Company accounts for income taxes using the liability method in accordance with ASC Topic 740, *Income Taxes*. Under this method, deferred tax assets and liabilities are determined based on temporary differences resulting from the different treatment of items for tax and financial reporting purposes. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. Additionally, the Company must assess the likelihood that deferred tax assets will be recovered as deductions from future taxable income. The Company evaluates the recoverability of its deferred tax assets on a quarterly basis.

***Basic and Diluted Net Loss per Share***

The Company computes basic net loss per share by dividing net loss attributable to common stockholders by the weighted-average number of shares of common stock outstanding during the period. The Company computes diluted net loss per share after giving consideration to the dilutive effect of stock options that are outstanding during the period, except where such non-participating securities would be anti-dilutive. The Company's JSOP awards, prior to exercise, are considered treasury shares by the Company and thus do not impact the Company's net loss per share calculation.

Basic and diluted net loss per share are the same for the years ended December 31, 2014 and 2013 as the Company was in a net loss position. Potentially dilutive non-participating securities have not been included in the calculations of diluted net loss per share, as their inclusion would be anti-dilutive.

***Segment Information***

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker, who is the Company's chief executive officer, in making decisions on how to allocate resources and assess performance. The Company views its operations and manages its business in one operating segment.

***Operating Leases***

The Company leases administrative and laboratory facilities under operating leases. Lease agreements may include rent holidays, rent escalation clauses and tenant improvement allowances. The Company recognizes scheduled rent increases on a straight-line basis over the lease term beginning with the date the Company takes possession of the leased space.

***Business Combinations***

The Company has a history of engaging in acquisition transactions that require the Company to evaluate whether the transaction meets the criteria of a business combination and, in some cases, whether it meets the definition of a reverse merger. For those acquisitions that meet the criteria for a reverse merger, the Company evaluates the entities involved to distinguish the appropriate accounting acquirer and acquiree according to ASC 805. If the transaction does not meet the business combination requirements, the transaction is accounted for as a recapitalization and no goodwill or intangible assets are recognized. If the acquisition meets the definition of a business combination, the Company allocates the purchase price, including any contingent consideration, to the assets acquired and the liabilities assumed at their estimated fair values as of the date of the acquisition with any excess of the purchase price paid over the estimated fair value of net assets acquired recorded as goodwill. The fair value of the assets acquired and liabilities assumed is typically determined by using either estimates of replacement costs or discounted cash flow valuation methods.

When determining the fair value of tangible assets acquired, the Company estimates the cost to replace the asset with a new asset, taking into consideration such factors as age, condition and the economic useful life of the asset. When determining the fair value of intangible assets acquired, the Company uses judgment to estimate the applicable discount rate, growth rates and the timing and amount of future cash flows. The fair value of assets acquired and liabilities assumed is typically determined using the assistance of an independent third party specialist.

Acquisition related costs are expensed in the period in which the costs are incurred and the services are received.

***Recent Accounting Pronouncements***

In August 2014, the Financial Accounting Standard Board (FASB) issued ASU 2014-15, *Presentation of Financial Statements – Going Concern* (Subtopic 205-40) ("ASU 2014-15"). ASU 2014-15 defines management's responsibility to evaluate whether there is substantial doubt about an organization's ability to continue as a going concern and provides guidance on the related footnote disclosures. This guidance is effective for annual reporting periods beginning after December 15, 2016, and interim periods within annual periods beginning after December 15, 2016. Early application is permitted. The Company is currently evaluating the impact of this new standard.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606) ("ASU 2014-09"). ASU 2014-09 supersedes the revenue recognition requirements in ASC Topic 605, *Revenue Recognition*, and most industry-specific guidance. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods or services. This guidance is effective for annual reporting periods beginning after December 15, 2016, including interim periods within that reporting period, under either full or modified retrospective approach. Early application is not permitted. The Company is currently evaluating the impact of this new standard on its revenue recognition policy.

The Company has considered other recent accounting pronouncements and concluded that they are either not applicable to the business, or that no material effect is expected on the consolidated financial statements as a result of future adoption.

**3. Acquisitions**

On January 23, 2014, the Company completed the Acquisition transaction with Xenetic UK which resulted in the Company acquiring all of the issued and outstanding common stock of Xenetic UK. The Acquisition was accounted for as a reverse acquisition under the acquisition method of accounting per ASC 805, with Xenetic UK treated as the accounting acquirer and the Company treated as the "acquired" company for financial reporting purposes. This was determined based on the following facts: (i) after the reverse merger, former shareholders of Xenetic UK held a majority of the voting interest of the combined company; (ii) former Board of Directors of Xenetic UK possess majority control of the Board of Directors of the combined company; and (iii) members of the management of Xenetic UK are responsible for the management of the combined company. As such, the financial statements of Xenetic UK are treated as the historical financial statements of the combined company.

The fair value of the consideration transferred in the reverse merger was $3.75 million. This was calculated as the number of shares of common stock that Xenetic UK would have had to issue in order for the Company's shareholders to hold the same equity interest in the combined entity immediately following the acquisition (approximately 9.2%), multiplied by the estimated fair value of the Company's common stock on the acquisition date (£0.06 per share). The estimated fair value of the Company's common stock was based on the price of the Company's stock on the acquisition date, which was actively traded on the Alternative Investments Market of the London Stock Exchange in the United Kingdom. In addition, Xenetic UK incurred approximately $3 million of transaction costs related to the reverse merger. The Company recognized approximately $0.5 million and $2.5 million of transaction costs related to the reverse merger in general and administrative expenses on the consolidated statement of comprehensive loss during the years ended December 31, 2014 and 2013, respectively.

As of December 31, 2014, the Company finalized the purchase accounting for the Acquisition. Management determined the purchase price allocations based on estimates of the fair values of all assets acquired and liabilities assumed. The Company believe that such information provides a reasonable basis for estimating the fair values of assets acquired and liabilities assumed. The fair values of the acquired assets and liabilities assumed are as follows:

| | | |
|---|---|---|
| Cash | $ | 43,502 |
| Accounts receivable | | 145 |
| Prepaid expenses | | 8,643 |
| Property, plant and equipment | | 331,500 |
| Accounts payable | | (354,079) |
| Accrued expenses | | (36,146) |
| Long-term debt | | (372,813) |
| Total identifiable net assets | | (379,248) |
| Goodwill | | 4,129,248 |
| Total | $ | 3,750,000 |

Following the Acquisition, an Agreement of Conveyance, Transfer and Assignment of Subsidiaries and Assumption of Obligations (the "Hive Out Agreement") was executed, whereupon 10,000,000 outstanding shares of common stock held by Oxbridge Technology Partners SA ("Oxbridge") were returned to the Company and recorded as treasury shares and were subsequently canceled. In exchange, Oxbridge acquired all issued and outstanding shares of both of the Company's former operating subsidiaries, Shift It Media Co. and General Aircraft, Inc. (the "Disposed Subsidiaries"), including all assets and liabilities connected with the businesses transferred. In addition, the Company disposed of the associated goodwill. The Hive Out Agreement also required a payment to Oxbridge of $430,000, which was paid by the Company shortly after the Acquisition.

The Company recorded this divestiture as a separate transaction from the Acquisition that results in the disposal of two of the Company's subsidiaries. The Disposed Subsidiaries did not record any operations in the combined entity following the Acquisition before they were disposed and these financial statements do not reflect the historical financial statements of the Disposed Subsidiaries as they were previously owned by the accounting acquiree. Accordingly, there are no balances to be recorded as discontinued operations on the statement of comprehensive loss. As a result of the divestiture of the Disposed Subsidiaries, the Company recorded a loss on disposal of subsidiaries of $1,069,675 during the year ended December 31, 2014.

Due to the nature of the Acquisition and related Hive Out Agreement, the transaction did not result in any adjustments with a continuing impact on the Company's results of operations.

**4. Significant Strategic Drug Development Collaborations**

***Baxter Healthcare SA and Baxter Healthcare Corporation***

In August 2005, the Company entered into an exclusive research, development, license and supply agreement with Baxter Healthcare SA ("Baxter SA") and Baxter Healthcare Corporation (together referred to as "Baxter") to develop products with an extended half-life of certain proteins and molecules using the Company's patent protected PolyXen® technology whereby polysialic acid ("PSA" – a chain of polysialic acids) is conjugated with Baxter's proprietary molecule(s) to create a new generation of drugs to treat the failure of blood to coagulate in the therapeutic treatment of blood and bleeding disorders, such as hemophilia. The lead candidate in this collaboration is a longer-acting form of a recombinant Factor VIII ("rFVIII") protein.

This agreement has been amended several times since 2005, most recently in January 2014. The January 2014 amendment provides for increased future development, regulatory, sales and deadline extension receipts, restructured target deadlines and royalty receipts on potential net sales. The Company is entitled to up to $100 million in potential development, regulatory, sales and deadline extension receipts, which are contingent on the performance of Baxter achieving certain milestones. The Company is also entitled to royalties on potential net sales varying by country of sale. The Company's right to receive these royalties in any particular country will expire upon the later of ten years after the first commercial sale of the product in that country or the expiration of patent rights in that particular country. In connection with this amendment, Baxter SA also made a $10 million equity investment in the Company in exchange for 10,695,187 shares of the Company's common stock during January 2014.

Through December 31, 2014, the Company and Baxter continued to engage in research and development activities with no resultant commercial products. $1 million was received and recognized as revenue during the year ended December 31, 2013 related to this collaboration as the Company's continued performance or future obligations were considered inconsequential or perfunctory. No revenue was recognized during the year ended December 31, 2014.

Baxter is a related party of the Company, with a share ownership of approximately 8.7% and 1.8% of the total issued common stock as of December 31, 2014 and 2013, respectively.

***SynBio LLC***

In August, 2011, SynBio LLC ("SynBio") and the Company entered into a stock subscription and collaborative development of pharmaceutical products agreement (the "Co-Development Agreement"). The Company granted an exclusive license to SynBio to develop pharmaceutical products using certain molecule(s) based on SynBio's technology and the Company's proprietary technology (PolyXen®, OncoHist™ and ImuXen®) that prolongs the active life and/or improves the pharmacokinetics of certain therapeutic proteins and peptides (as well as conventional drugs). In return, SynBio granted an exclusive license to the Company to use the pre-clinical and clinical data generated by SynBio in certain agreed products and engage in the development of commercial candidates.

SynBio and the Company are each responsible for funding their own research activities. There are no milestone or other research-related payments due under the agreement other than fees for the supply of each company's respective research supplies based on their technology, which, when provided, are due to mutual convenience and not representative of an ongoing or recurring obligation to supply research supplies. Most recently, similar to the Company's agreement with Baxter, Serum Institute of India Limited ("Serum Institute") has agreed to directly provide the research supplies to SynBio, where the Company is not liable for any failure to supply the research supplies as a result of any act or fault of Serum Institute's. Upon successful commercialization of any resultant products, the Company is entitled to receive royalties on sales in certain territories and pay royalties to SynBio for sales outside those certain territories.

Through December 31, 2014, the Company and SynBio continued to engage in research and development activities with no resultant commercial products. The Company did not recognize revenue in connection with the Co-Development Agreement during the years ended December 31, 2014 and 2013.

SynBio is an affiliate of the Company, with a share ownership of approximately 41.6% and 45.3% of the total issued common stock as of December 31, 2014 and 2013, respectively. On December 31, 2014, the Company granted SynBio a warrant to purchase 6,745,000 shares of common stock in connection with ongoing collaborative activities. See Note 9, *Stockholders' Equity*, for further information on the warrant.

***Serum Institute of India Limited***

In the period from 2004 through 2011, the Company entered into and amended certain license and supply agreements with Serum Institute. The original license agreement with Serum Institute was a collaborative Development and Manufacturing Arrangement ("DMA") to develop agreed upon potential commercial product candidates using the Company's PolyXen® technology. Serum Institute then endeavored to further develop the potential commercial product candidates and eventually initiate pre-clinical and clinical trials at their own cost. The agreement was amended in 2011, resulting in the surrender of development rights for 14 potential commercial product candidates in 2012, which were vested to Serum Institute under the terms of the previous agreements, back to the Company.

Following the 2011 amendment, Serum Institute retained an exclusive license to use the Company's PolyXen® technology to research and develop one potential commercial product, Polysialylated Erythropoietin ("PSA-EPO"). Serum Institute will be responsible for conducting all pre-clinical and clinical trials required to achieve regulatory approvals within the certain predetermined territories at Serum Institute's own expense. The royalty payment schedule based on net revenues on the future commercial sales of PSA-EPO under the DMA was also modified as a result of the 2011 amendment. Royalty payments are payable by Serum Institute to the Company for net sales to certain customers in the Serum Institute sales territory. Royalty payments are payable by the Company to Serum Institute for net sales received by the Company over the term of the license. There are no milestone or other research-related payments due under the DMA.

Through December 31, 2014, the Company and Serum Institute continued to engage in research and development activities with no resultant commercial products. No royalty revenue or expense was recognized by the Company related to the Serum Institute arrangement during the years ended December 31, 2014 and 2013.

Serum Institute is a related party of the Company, with a share ownership of approximately 9.2% and 10.6% of the total issued common stock as of December 31, 2014 and 2013, respectively. On December 31, 2014, the Company granted Serum Institute a warrant to purchase 3,200,000 shares of common stock in connection with ongoing collaborative activities. See Note 9, *Stockholders' Equity*, for further information on the warrant.

**OJSC Pharmsynthez**

In November 2011, the Company entered into a collaborative research and development license agreement with OJSC Pharmsynthez (the "Pharmsynthez Arrangement") pursuant to which the Company granted an exclusive license to Pharmsynthez to develop, commercialize and market six product candidates based on the Company's PolyXen® and ImuXen® technology in certain territories. In exchange, Pharmsynthez granted an exclusive license to the Company to use any pre-clinical and clinical data developed by Pharmsynthez, within the scope of the Pharmsynthez Arrangement, and to engage in further research, development and commercialization of drug candidates outside of certain territories at the Company's own expense.

Pharmsynthez is a related party of SynBio, which is an affiliate of the Company. In addition, one of the Company's directors is also a director of SynBio and Pharmsynthez.

## 5. Property and Equipment, net

Property and equipment, net consists of the following:

| | December 31, 2014 | December 31, 2013 |
|---|---|---|
| Laboratory equipment | $ 254,150 | $ 1,106,761 |
| Office and computer equipment | 189,459 | 137,974 |
| Leasehold improvements | 92,354 | 69,296 |
| Furniture and fixtures | 50,150 | 52,904 |
| Property and equipment – at cost | 586,113 | 1,366,935 |
| Less accumulated depreciation | (466,664) | (1,214,332) |
| Property and equipment – net | $ 119,449 | $ 152,603 |

Following the closure of the laboratory in London, approximately $885,000 of fully depreciated laboratory equipment was retired in 2014. Depreciation expense was $83,863 and $52,032 for the years ended December 31, 2014 and 2013, respectively.

## 6. Goodwill and Indefinite-Lived Intangible Assets

*Goodwill*

A reconciliation of the change in the carrying value of goodwill is as follows:

| | |
|---|---|
| Balance as of January 1, 2013 | $ 3,592,073 |
| Foreign currency translation | 73,126 |
| Balance as of December 31, 2013 | 3,665,199 |
| Acquired from acquisitions | 4,129,248 |
| Disposed with Hive Out Agreement | (4,129,248) |
| Foreign currency translation | (200,042) |
| Balance as of December 31, 2014 | $ 3,465,157 |

The goodwill acquired from the Acquisition was disposed in connection with the Hive Out Agreement. See Footnote 3, *Acquisitions*, for further discussion on the Acquisition and the Hive Out Agreement. As of October 1, 2014 and 2013, the dates of the Company's annual impairment review, the fair value of the Company's goodwill balance significantly exceeded its carrying value.

*Indefinite-Lived Intangible Assets*

The Company's acquired indefinite-lived intangible asset, OncoHist™, is IPR&D relating to the Company's business combination with SymbioTec. As of October 1, 2014 and 2013, the dates of the Company's annual impairment review, the fair value of the Company's indefinite-lived intangible asset balance was $14.61 million and $10.40 million, respectively, which exceeded its carrying value by approximately 44% and 1%, respectively. The carrying value of OncoHist™ was $9.75 million and $10.32 million as of December 31, 2014 and 2013, respectively. No impairment was recorded during the years ended December 31, 2014 and 2013. The changes in the carrying value reflected herein are solely comprised of the effects of changes in foreign currency.

The Company, with the assistance of an independent third party, calculated the fair value of OncoHist™ by using the Multi-Period Excess Earnings Method ("MPEEM"), which is a form of the income approach, using Level 3 inputs under the fair value hierarchy. Under the MPEEM, the fair value of an intangible asset is equal to the present value of the asset's incremental after-tax cash flows (excess earnings) remaining after deducting the market rates of return on the estimated value of contributory assets (contributory charge) over its remaining useful life. This method requires the Company to make long-term projections of the amount and timing of income and expenses related to development and commercialization of the acquired intangible asset and assumptions regarding the rate of return on contributory assets, the weighted average cost of capital and the discount rate for estimated future after-tax cash flows. Specifically, this method took into account the Company's estimates of future incremental milestone payments that may be achieved upon completion of certain clinical trial stages, regulatory approval and sales goals upon commercialization, as well as the Company's expected royalty income based on sales upon commercialization. Projected expenses are based on the Company's forecasted budget required to complete the development of the IPR&D and are estimates subject to change based on several factors including the results of clinical trials and delays in regulatory approval. The discount rate used is commensurate with the uncertainties associated with the economic estimates described above and reflects the stage of development, the time and resources needed to complete the development of the product and the risks of advancement through regulatory approval processes.

OncoHist™ is not yet commercialized and has not yet begun to be amortized as of December 31, 2014.

## 7. Accrued Expenses

Accrued expenses consist of the following:

| | December 31, 2014 | December 31, 2013 |
|---|---|---|
| Accrued professional fees | $ 574,186 | $ 1,106,358 |
| Accrued research costs | 573,879 | 29,682 |
| Accrued payroll and benefits | 67,120 | 99,548 |
| Accrued bonus compensation | – | 422,226 |
| Other | 194,506 | 169,053 |
| | $ 1,409,691 | $ 1,826,867 |

## 8. Income Taxes

The Company accounts for income taxes using the liability method under ASC Topic 740, *Income Taxes*. Under this method, deferred tax assets and liabilities are determined based on temporary differences resulting from the different treatment of items for tax and financial reporting purposes. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. Additionally, the Company must assess the likelihood that deferred tax assets will be recovered as deductions from future taxable income. The Company has provided a full valuation allowance on the Company's deferred tax assets because the Company believes it is more likely than not that its deferred tax assets will not be realized. The Company evaluates the recoverability of its deferred tax assets on a quarterly basis. Currently, there is no provision for income taxes as the Company has incurred losses to date.

The components of (loss) before income taxes are as follows:

| | Year ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Domestic (US) | $ (4,040,654) | $ (547,508) |
| Foreign (UK) | (10,003,427) | (7,855,509) |
| Foreign (Germany) | (263,023) | (176,229) |
| Loss before income taxes | $ (14,307,104) | $ (8,579,246) |

The reconciliation of income tax provision (benefit) at the US corporation tax rate, being the rate applicable to the country of domicile of Xenetic Biosciences, Inc. to net income tax provision (benefit) is as follows (prior periods at UK rates):

| | Year ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Federal | $ (4,860,256) | $ (1,994,675) |
| State | (145,209) | – |
| Increase in tax losses not recognized | 4,949,805 | 1,461,836 |
| Permanent differences, net | (1,529,190) | 674,920 |
| Foreign rate differential | 1,184,770 | (100,131) |
| Share-based compensation, net | 505,035 | 9,179 |
| Other | 7,273 | 163 |
| Impairment of IPR&D | – | – |
| Enhanced research and development tax credits | (112,228) | (51,292) |
| Net provision (benefit) for income taxes | $ – | $ – |

Deferred tax assets and liabilities reflect the net tax effect of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets are as follows:

| | Year ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Deferred tax assets: | | |
| UK net operating loss carryforwards | $ 9,198,798 | $ 7,735,113 |
| UK capital loss carryforwards | 1,874,254 | – |
| US federal net operating loss carryforwards | 923,816 | 242,254 |
| Enhanced research and development tax credits | 786,342 | 713,029 |
| Germany net operating loss carryforwards | 393,638 | 360,763 |
| US state net operating loss carryforwards | 233,825 | 35,929 |
| Accrued expenses | 157,329 | – |
| Share-based compensation | 52,320 | 409,391 |
| Depreciation | 37,703 | – |
| Other | 115,384 | 24,781 |
| Total deferred tax assets before valuation allowance | 13,773,409 | 9,521,260 |
| Less valuation allowance | (13,773,409) | (9,521,260) |
| Net deferred tax assets | $ – | $ – |
| Deferred tax liability: | | |
| Indefinite-lived intangible asset | $ (3,080,096) | $ (3,257,910) |
| Total net deferred tax liability | $ (3,080,096) | $ (3,257,910) |

For the years ended December 31, 2014 and 2013, the Company had UK net operating loss carryforwards of $45.99 million and $41.7 million, respectively, US federal net operating loss carryforwards of $2.95 million and $692,153, respectively, US state net operating loss carryforwards of $2.92 million and $690,942, respectively, and Germany net operating loss carryforwards of approximately $1.25 million and $1.14 million, respectively. The UK and Germany net operating loss carryforwards can be carried forward indefinitely. The US federal and state net operating loss carryforwards begin to expire in 2032.

The Company's ability to use its operating loss carryforwards and tax credits generated in the US to offset future taxable income is subject to restrictions under Section 382 of the United States Internal Revenue Code (the "Internal Revenue Code"). These restrictions may limit the future use of the operating loss carryforwards and tax credits if certain ownership changes described in the Internal Revenue Code occur. Future changes in stock ownership may occur that would create further limitations on the Company's use of the operating loss carryforwards and tax credits. In such a situation, the Company may be required to pay income taxes, even though significant operating loss carryforwards and tax credits exist.

The Company's ability to use its operating loss carryforwards and tax credits generated in the UK are subject to restrictions under UK tax legislation. These regulations may limit the future use of operating loss carryforwards if there is a change in ownership and a change in the nature or conduct of the business carried on by the Company, and in certain circumstances where there is a change in the nature or conduct of the business only. In such cases the carryforwards would cease to be available to set against future income.

The Company's ability to use its operating loss carryforwards and tax credits generated in Germany are also subject to restrictions under German tax legislation. These regulations may limit the future use of operating loss carryforwards if there is a change in ownership. In such cases the carryforwards would cease to be available to set against future income.

As of December 31, 2014 and 2013, the Company recorded uncertain tax positions of zero and $185,961, respectively, due to a claim for research and development tax credits. A full valuation allowance has been provided against the Company's research and development credits in 2013. In 2014, the Company determined that it is unable to obtain and compile the necessary information to support and defend the recoverability of the research and development tax credits, resulting in the write-off of the previously fully reserved balance. The changes to uncertain tax positions for 2014 and 2013 were as follows:

| | Year ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Uncertain tax benefits as of January 1 | $ 185,961 | $ 182,251 |
| Gross adjustments in tax positions | (185,961) | – |
| Gross increases | – | – |
| Foreign currency translation | – | 3,710 |
| Uncertain tax positions as of December 31 | $ – | $ 185,961 |

The Company files income tax returns in the US federal tax jurisdiction and Massachusetts state tax jurisdiction, and certain foreign tax jurisdictions. Since the Company is in a loss carryforward position, the Company is generally subject to examination by the US federal, state, foreign, and local income tax authorities for all tax years in which a loss carryforward is available. The Company is not currently under examination by the Internal Revenue Service. Subject to the research and development tax credit claim referred to above, the Company is not currently under examination by any other jurisdiction for these years. The Company has not recorded any interest or penalties for unrecognized tax benefits since its inception.

## 9. Stockholders' Equity

### *Common Stock*

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are entitled to dividends when and if declared by the Board of Directors. In the event of any voluntary or involuntary liquidation, dissolution or winding-up of the Company, the holders of common stock are entitled to share ratably in the assets of the Company available for distribution.

On January 30, 2014, the Company announced the amendment of the licensing agreement with Baxter in which certain financial and timing aspects of the agreement were modified. As a result, the Company is entitled to receive certain amounts in development, regulatory and sales milestone payments as well as increased royalties on potential net sales. In addition, Baxter SA made a direct equity investment of $10 million in cash in exchange for 10,695,187 shares of the Company's common stock. See Note 4, *Significant Strategic Drug Development Collaborations*, for further discussion on the Company's collaboration agreement with Baxter.

On December 31, 2014, 3,244,784 shares of new common stock were granted to FDS Pharma ASS ("FDS") in consideration for the performance of services and termination of a prior collaboration agreement between Lipoxen and FDS. The Company determined that the fair value of the shares of common stock granted is more reliably measurable than the fair value of the services received. The Company assessed the fair value of one share of common stock on the measurement date to be $0.25, which is the Company's quoted price per share of common stock on the OTCQB marketplace exchange on December 31, 2014. As performance by FDS was complete at the issuance date, the Company recorded expense of approximately $812,000 to research and development expense in the consolidated statement of comprehensive loss during the year ended December 31, 2014. FDS is a related party of SynBio, an affiliate of the Company.

***Warrants***

In connection with the Company's collaboration agreements, the Company issued warrants to purchase shares of common stock to its collaborative partners. A warrant was also issued to a non-employee director for consulting services provided to the Company. These warrants were fair valued at issuance date using the Black-Scholes option pricing model. The warrants are subject to re-measurement at each reporting period until the measurement date is reached. Expense is recognized on a straight-line basis over the expected service period or at the date of issuance, if there is not a service period.

In 2010, Baxter SA was granted a warrant to purchase 4,588,298 new shares of common stock, which were exercisable immediately after issuance and expire on June 30, 2015. These warrants, which were fair valued at $932,000 at the time of issuance, were outstanding as of December 31, 2014 and 2013.

In 2011, Serum Institute was granted a warrant to purchase 2,400,000 new shares of common stock in three tranches of 800,000 each, which are exercisable immediately after issuance and expire in a range of 6 to 18 months after issuance ("Serum Institute 2011 Warrant"). The Serum Institute 2011 Warrant was fair valued at $10,000 at the time of issuance. The Serum Institute 2011 Warrant fully expired over a period spanning 2012 and 2013. Serum Institute did not exercise any warrants during the year ended December 31, 2013. On December 31, 2014, Serum Institute was granted a warrant to purchase 3,200,000 new shares of common stock at an exercise price of $0.77 per share ("Serum Institute 2014 Warrant"). The Serum Institute 2014 Warrant, which was fair valued at approximately $480,000 at the time of issuance, is exercisable in two equal tranches, each with separate non-market, performance-based vesting criteria. The Company uses its judgment to assess the probability and timing of Serum Institute achieving this vesting criteria and estimated that it is probable that the vesting criteria will be achieved for each tranche. These judgments are reassessed at each reporting period until the measurement date is reached.

In connection with the Serum Institute 2014 Warrant grant, warrants to purchase 160,000 aggregate new shares of common stock were issued to Serum Institute employees ("Serum Institute Partner Warrants") on December 31, 2014 under the same terms and conditions of the Serum Institute 2014 Warrant. The Serum Institute Partner Warrants were fair valued at approximately $24,000 at the time of issuance. The Serum Institute 2014 Warrant and Serum Institute Partner Warrants expire on December 30, 2019 and no warrants were exercised during the year ended December 31, 2014.

In 2011, SynBio was granted a warrant to purchase 3,545,600 new shares of common stock, which was exercisable two years after issuance and expires on December 2, 2016 ("SynBio 2011 Warrant"). The SynBio 2011 Warrant, which was fair valued at $108,000 at the time of issuance, was outstanding as of December 31, 2013. On December 31, 2014, SynBio was granted a warrant to purchase 6,745,000 new shares of common stock at an exercise price of $0.77 per share ("SynBio 2014 Warrant"). The SynBio 2014 Warrant is exercisable in four equal tranches, each with separate non-market, performance-based vesting criteria. The Company uses its judgment to assess the probability and timing of SynBio achieving this vesting criteria and estimated that it is probable that the vesting criteria will be achieved for two of the defined tranches. The warrant tranches expected to vest were fair valued at approximately $506,000 at the time of issuance, The two tranches with vesting criteria not probable to be achieved will not be initially recognized. These judgments are reassessed at each reporting period until the measurement date is reached. Upon issuance of the SynBio 2014 Warrant on December 31, 2014, the SynBio 2011 Warrant was canceled and of no further force and effect.

In connection with the SynBio 2014 Warrant grant, warrants to purchase 320,000 aggregate new shares of common stock were issued to SynBio and Pharmsynthez non-director designees ("SynBio Partner Warrants") on December 31, 2014 under the same terms and conditions of the SynBio 2014 Warrant. The SynBio Partner Warrants were fair valued at approximately $24,000 at the time of issuance. The SynBio 2014 Warrant expires on December 30, 2019 and no warrants were exercised during the year ended December 31, 2014.

On December 31, 2014, a non-employee director was granted a warrant to purchase 1,600,000 new shares of common stock at an exercise price of $0.77 per share for services provided to the Company. This warrant, which was fair valued at approximately $240,000 at the time of issuance, is exercisable two years after issuance. As performance was completed and the measurement date reached at the time of issuance, the Company recorded expense of approximately $240,000 to general and administrative expenses in the consolidated statement of comprehensive loss during the year ended December 31, 2014. This warrant expires on December 30, 2019 and was still outstanding as of December 31, 2014.

Key assumptions used in the Black-Scholes option pricing model for warrants granted during the year ended December 31, 2014 are as follows:

| | 2014 |
|---|---|
| Weighted-average expected dividend yield (%) | – |
| Weighted-average expected volatility (%) | 103.32 |
| Weighted-average risk-free interest rate (%) | 0.96 |
| Weighted-average expected life of option (years) | 5.00 |
| Weighted-average exercise price ($) | 0.77 |
| Model used | Black-Scholes |

**10. Share-Based Compensation**

Total share-based compensation related to stock options, common stock awards and JSOP awards was $702,042 and $431,504 for the years ended December 31, 2014 and 2013, respectively.

Share-based compensation is classified in the consolidated statements of comprehensive loss as follows:

| | Years Ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Research and development expenses | $ 141,633 | $ 60,980 |
| General and administrative expenses | 560,409 | 370,524 |
| | $ 702,042 | $ 431,504 |

***Stock Option Modification***

Prior to the Acquisition, the Company had two incentive stock plans, the Lipoxen plc Unapproved Share Option Plan (the "2000 Stock Plan") and the Xenetic Biosciences plc 2007 Share Option Scheme (the "2007 Stock Plan"). Subsequent to the Acquisition, the 2000 and 2007 Stock Plans were converted to reflect the new shares issued by the Company under the Scheme of Arrangement related to the Acquisition. As part of the conversion, option holders under the 2000 and 2007 Stock Plan have the right to subscribe for a number of shares of common stock in the Company (the "Replacement Option Shares") in exchange for the cancellation and surrender by the option holder of the original options granted by the 2000 and 2007 Stock Plans. The number of Replacement Option Shares is determined in the same manner in which the shareholders of Xenetic UK were given the right to acquire shares of common stock in the Company according to the Acquisition. The aggregate exercise price payable in US dollars for Replacement Option Shares is the same as the aggregate exercise price in pounds sterling of the original options, using a foreign currency exchange rate for pounds sterling into US dollars quoted by Barclays Bank plc at 12 noon Greenwich Mean Time ("GMT") on January 23, 2014, the date of the Acquisition. The conversion of the options is treated as an option modification. The Company accounted for the option modification under ASC Topic 718, *Compensation – Stock Compensation*, and determined the option modification does not result in incremental stock compensation cost that is material to the Company's results of operations during the year ended December 31, 2014.

***Stock Options***

The Company grants stock option awards to employees and non-employees with varying vesting terms under the Xenetic Biosciences, Inc. Equity Incentive Plan ("Stock Plan"). The Company measures the fair value of stock option awards using the Black-Scholes option pricing model, which uses the assumptions noted in the tables below, including the risk-free interest rate, expected term, share price volatility, dividend yield and forfeiture rate. The risk-free interest rate is based upon the US Treasury yield curve in effect at the time of grant, with a term that approximates the expected life of the option. For employee stock options issued in 2014 that qualify as "plain vanilla" stock options in accordance with Staff Accounting Bulletin No. 110 ("SAB 110"), the expected term is based on the simplified method, as defined by SAB 110. The Company has a limited history of stock option exercises, which does not provide a reasonable basis for the Company to estimate the expected term of employee stock options. For all other employee stock options, the Company estimates the expected life using judgment based on the anticipated research and development milestones of the Company's clinical projects and behaviour of the Company's employees. The expected life of non-employee options is the contractual life of the option. The Company determines the expected volatility based on a weighted-average of the historical volatility of a peer group of comparable publicly traded companies with product candidates in similar stages of development to the Company's product candidates in conjunction with the Company's historical volatility. The Company has applied an expected dividend yield of 0% as the Company has not historically declared a dividend and does not anticipate declaring a dividend during the expected life of the options. Further, the Company has applied a forfeiture rate of 0% as the Company has not historically experienced forfeitures. During 2013, approximately two million options were forfeited by a management executive as a result of his unanticipated short period of employment; however, the Company views this situation to be an independent event and does not expect this type of forfeiture to reoccur in the future.

***Employee Stock Options***

During the years ended December 31, 2014 and 2013, 1.08 million and 2.30 million total stock options to purchase shares of common stock were granted under the Stock Plan, respectively, with a weighted average grant date fair value per option share of $0.23 and $0.07, respectively. During the years ended December 31, 2014 and 2013, 1,984,080 and 55,379 stock options were exercised, respectively, and cash received from those stock option exercises was $101,933 and $2,090, respectively.

During the year ended December 31, 2014 and 2013, 0.68 million and 0.45 million total stock options vested, with total fair values of $115,864 and $63,616, respectively. As of December 31, 2014, there was $199,286 of unrecognized share-based compensation related to employee stock options that are expected to vest. The Company expects to recognize this expense over a weighted-average period of approximately two years.

Key assumptions used in the Black-Scholes option pricing model for options granted to employees during the years ending December 31, 2014 and 2013 are as follows:

| | Years Ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Weighted-average expected dividend yield (%) | – | – |
| Weighted-average expected volatility (%) | 103.36 | 73.39 |
| Weighted-average risk-free interest rate (%) | 1.48 | 0.92 |
| Weighted-average expected life of option (years) | 5.33 | 4.00 |
| Weighted-average exercise price ($) | 0.31 | 1.22 |
| Model used | Black-Scholes | Black-Scholes |

The following is a summary of employee stock option activity for the years ended December 31, 2014 and 2013:

| | Number of shares | Weighted-average exercise price | Weighted-average remaining life (years) | Aggregate intrinsic value |
|---|---|---|---|---|
| Outstanding as of January 1, 2013 | 4,985,480 | 0.42 | | |
| Granted | 2,304,000 | 1.22 | | |
| Exercised | (55,379) | 0.04 | | $ 10,663 |
| Forfeited/Expired | (2,011,671) | 1.22 | | |
| Outstanding as of December 31, 2013 | 5,222,430 | 0.47 | 4.68 | $ 432,392 |
| Granted | 1,080,000 | 0.31 | | |
| Exercised | (1,984,080) | 0.05 | | $ 509,622 |
| Forfeited/Expired | (132,422) | 0.93 | | |
| Outstanding as of December 31, 2014 | 4,185,928 | 0.62 | 6.86 | $ 80,338 |
| | | | | |
| Vested or expected to vest as of December 31, 2014 | 4,185,928 | 0.62 | 6.86 | $ 80,338 |
| | | | | |
| Exercisable as of December 31, 2013 | 4,063,646 | $ 0.30 | 3.72 | $ 432,392 |
| Exercisable as of December 31, 2014 | 2,630,024 | $ 0.60 | 5.48 | $ 80,338 |

A summary of the status of the Company's non-vested employee stock option shares as of December 31, 2014 and the changes during the year ended December 31, 2014 is as follows:

| | Number of shares | Weighted-average grant date fair value |
|---|---|---|
| Balance as of January 1, 2014 | 1,158,784 | $ 0.08 |
| Granted | 1,080,000 | 0.23 |
| Vested | (682,880) | 0.17 |
| Forfeited | – | – |
| Balance as of December 31, 2014 | 1,555,904 | $ 0.15 |

***Non-Employee Stock Options***

Share-based compensation expense related to stock options granted to non-employees is recognized as the services are rendered on a straight-line basis. The Company determined that the fair value of the stock options is more reliably measurable than the fair value of the services received. Compensation expense related to stock options granted to non-employees is subject to re-measurement at each reporting period until the options vest.

During the years ended December 31, 2014 and 2013, 480,000 and zero non-employee stock options were granted under the Stock Plan, respectively, with a weighted average grant date fair value per option share of $0.23 and zero, respectively. No non-employee stock options were exercised during years ended December 31, 2014 and 2013.

During the year ended December 31, 2014 and 2013, 0.26 million and 0.10 million total stock options vested, with total fair values of $62,121 and $18,034, respectively. As of December 31, 2014, there was $88,692 of unrecognized share-based compensation related to non-employee stock options that are expected to vest. The Company expects to recognize this expense over a weighted-average period of approximately two years.

Key assumptions used in the Black-Scholes option pricing model for non-employees options during the years ended December 31, 2014 and 2013 are as follows:

| | Years Ended December 31, | |
|---|---|---|
| | 2014 | 2013 |
| Weighted-average expected dividend yield (%) | – | – |
| Weighted-average expected volatility (%) | 116.22 | 78.25 |
| Weighted-average risk-free interest rate (%) | 1.62 | 1.75 |
| Weighted-average expected life of option (years) | 7.60 | 5.90 |
| Weighted-average exercise price ($) | 0.39 | 0.52 |
| Model used | Black-Scholes | Black-Scholes |

The following is a summary of non-employee stock option activity for the years ended December 31, 2014 and 2013:

| | Number of shares | Weighted-average exercise price | Weighted-average remaining life (years) | Aggregate intrinsic value |
|---|---|---|---|---|
| Outstanding as of January 1, 2013 | 415,520 | $ 0.52 | | |
| Granted | – | – | | |
| Exercised | – | – | | |
| Forfeited | – | – | | |
| Outstanding as of December 31, 2013 | 415,520 | 0.52 | 5.90 | $ 49 |
| Granted | 480,000 | 0.25 | | |
| Exercised | – | – | | |
| Forfeited | – | – | | |
| Outstanding as of December 31, 2014 | 895,520 | 0.39 | 7.60 | $ 159 |
| Vested or expected to vest as of December 31, 2014 | 895,520 | 0.39 | 7.60 | $ 159 |
| Exercisable as of December 31, 2013 | 127,736 | $ 0.48 | 4.38 | $ 49 |
| Exercisable as of December 31, 2014 | 383,664 | $ 0.42 | 6.40 | $ 159 |

A summary of the status of the Company's non-vested non-employee stock option shares as of December 31, 2014 and the changes during the year ended December 31, 2014 is as follows:

| | Number of shares | Weighted-average grant date fair value |
|---|---|---|
| Balance as of January 1, 2014 | 287,784 | $ 0.13 |
| Granted | 480,000 | 0.23 |
| Vested | (255,928) | 0.24 |
| Forfeited | – | – |
| Balance as of December 31, 2014 | 511,856 | $ 0.21 |

***Common Stock Awards***

The Company granted common stock awards to a non-employee in exchange for services provided. The Company measured the fair value of these awards using the fair value of the services provided as it is a more reliable measure of the fair value of the awards. The fair value measurement date of these awards is generally the date the performance of services is complete. The fair value of the awards is recognized as services are rendered on a straight-line basis.

The Company granted 187,406 and 282,508 common stock awards during the years ended December 31, 2014 and 2013, respectively, in exchange for professional services. As all services were rendered in each respective period, compensation expense related to common stock awards of $102,000 and $85,825 was recognized during the years ended December 31, 2014 and 2013, respectively. All common stock awards were authorized but not issued as of December 31, 2014.

***Joint Share Ownership Plan***

In 2010 and 2012, the Company issued 1,701,913 and 8,986,281 JSOP awards, respectively, to two senior executives under the JSOP. Under the JSOP, shares in the Company are jointly purchased at fair market value by the participating executives and the trustees of the JSOP trust, with such shares held in the JSOP trust. For US GAAP purposes the awards are valued as employee options.

The JSOP trust holds the shares of the JSOP until such time as the JSOP shares are vested and the participating executives exercise their rights under the JSOP. The JSOP trust is granted an interest bearing loan by the Company in order to fund the purchase of its interest in the JSOP shares. The loan held by the trust is eliminated on consolidation in the financial statements of the Company. The Company funded portion of the share purchase price is deemed to be held in treasury until such time as they are transferred to the employee and is recorded as a reduction in equity.

The exercise price of the "option" is deemed to be the market value of the shares at the date of issue. The awards vest based on certain market conditions, which require each tranche of shares to meet specific share price hurdles, or change in control conditions, as defined by the plan. Under the JSOP and subject to the vesting of the participants' interest, participating executives will, when the JSOP shares are sold, be entitled to a share of the proceeds of sale equal to the growth in market value of the JSOP shares versus the exercise price, less simple interest on the original share purchase price, net of executives' cash contribution at inception, as agreed for each grant (the "Carry Charge"). The balance of the proceeds will remain to the benefit of the JSOP trust and be applied to the repayment of the loan originally made by the Company to the JSOP trust. Any funds remaining in the JSOP trust after settlement of the loan and any expenses of the JSOP trust are for the benefit of the Company.

The Company measures the fair value of the awards using Monte Carlo simulations, which requires estimates based on the Company's judgment as well as other assumptions. These estimates include the expected term of each tranche of the JSOP awards, which the Company determined to be the initial life of the awards, and expected volatility, which is based on a weighted-average of the historical volatility of a peer group of comparable publicly traded companies with product candidates in similar stages of development to the Company's product candidates in conjunction with the historical volatility of Xenetic Biosciences plc's shares when traded on the UK Alternative Investment Market. The Company has applied an expected dividend yield of 0% as the Company has not historically declared a dividend and does not anticipate declaring a dividend during the expected life of the awards. The risk-free interest rate is based upon the U.S. Treasury yield curve in effect at the time of grant, with a term that approximates the expected life of the awards. The compensation expense is recorded over the expected life of the option, regardless of whether the awards vest. Having established the full value of the JSOP awards using the Monte Carlo simulation outlined above, a deduction is made in respect of the anticipated Carry Charge in order that the expense recorded in the financial statements only represents the participating executives' net interest in the awards.

On exercise of the JSOP awards by the executives the Carry Charge due to the Company will be recognized as additional paid-in capital, arising from the sale of treasury stock.

During 2011, the 2010 JSOP awards fully vested under the terms of the JSOP due to a significant change in beneficial ownership of the Company and the related compensation charges were fully recorded during periods prior to 2013 related to this accelerated vesting. During the first quarter of 2014, the 2012 JSOP awards fully vested under the terms of the JSOP due the achievement of specific share price hurdles and the related compensation charges were fully recorded during the first quarter of 2014 related to this accelerated vesting. As of December 31, 2014, all JSOP awards were fully vested.

The total fair value of the 2012 JSOP awards was $853,889 at the date of issuance. The Company recognized $344,905 and $279,484 of compensation costs during the years ended December 31, 2014 and 2013.

**11. Employee Benefit Plans**

The Company has a defined contribution 401(k) savings plan (the "401(k) Plan"). The 401(k) Plan covers substantially all US employees, and allows participants to defer a portion of their annual compensation on a pre-tax basis. Company contributions to the 401(k) Plan may be made at the discretion of the Board of Directors. During the year ended December 31, 2014 and 2013, the Company made $31,738 and zero contributions to the 401(k) Plan.

In the UK, the Company has adopted a defined contribution plan (the "UK Plan") which qualifies under the rules established by HM Revenue & Customs. The UK Plan generally allows all UK employees to contribute a minimum of 3% of salary with no maximum limit. The Company contributes to the plan between 8% and 12% of the employee's salary, depending upon seniority of the employee. The Company, at its discretion, may also contribute to an employee's personal pension plan. The Company paid total contributions of $108,439 and $129,353 during the years ended December 31, 2014 and 2013, respectively.

**12. Commitments**

In August 2013, the Company entered into an agreement to lease office and laboratory space in Lexington, Massachusetts under an operating lease with a commencement date of January 1, 2014 and a termination date of January 31, 2019. With the execution of this lease, the Company is required to maintain a $66,000 letter of credit as a security deposit. In connection with the Lexington lease, the Company recorded $120,299 as prepaid rent as of December 31, 2014, with $90,838 recorded as a non-current asset. The Company also incurred a liability of $89,074 with respect to the Company's contribution to the landlord's leasehold improvements, of which $73,117 is outstanding as of December 31, 2014, with $56,383 recorded as a non-current liability. This liability is repayable as additional rent expense over the term of the lease and bears interest at 6%. In addition, the Company leases office space in London, UK, which is due to expire in March 2017. In September 2014, the Company served notice to the landlord of the office space in London in accordance with the terms of the break clause in the lease, with an expected termination date in March 2015. The Company also leased laboratory space in London, UK during 2013, however this lease was terminated in December 2013.

The Company's contractual commitments under all non-cancelable operating leases as of December 31, 2014 are as follows:

| As of December 31, | Total Operating Leases |
|---|---|
| 2015 | $ 94,686 |
| 2016 | 98,645 |
| 2017 | 102,604 |
| 2018 | 106,563 |
| 2019 | 8,908 |
| Total minimum lease payments | $ 411,406 |

Rent expense is calculated on a straight-line basis over the term of the lease. Rent expense under the Company's operating leases was $172,821 and $280,606 for the years ended December 31, 2014 and 2013, respectively.

**13. Related Party Transactions**

In May 2011, the Company received a short term unsecured loan facility of up to $1.7 million from SynBio, an affiliate of the Company, of which $395,000 and $681,124 was outstanding as of December 31, 2014 and 2013, respectively. A payment of $286,124 on the outstanding loan was made to SynBio during the year ended December 31, 2014. No payments were made during the year ended December 31, 2013. The loan had an interest rate of 8.04% per annum as of the date of grant, with interest payable upon repayment of the loan, which was to be seven months after the closing date of the loan. During 2012, the loan matured and it was agreed by both parties that the loan can be called due with full repayment of the outstanding principal including accrued interest upon future agreement by both parties. It was also agreed at this point that as of July 1, 2012, no further interest on the outstanding loan balance will be accrued. The loan is recorded in "Loans due to related parties" within current liabilities as of December 31, 2014 and 2013. The loan does not bear interest at the prevailing market rate for instruments with similar characteristics.

During the year ended December 31, 2014, the Company also received consulting and patent legal services from a firm owned by a non-employee director of the Company. The total amount of services received was $133,381 for the year ended December 31, 2014, with $51,708 included in accounts payable on the consolidated balance sheet as of December 31, 2014. No services were received by the firm in 2013.

Please refer to Note 4, Significant Strategic Drug Development Collaborations, and Note 9, Stockholder's Equity, for details on arrangements with collaboration partners and non-employee directors that are also related parties.

**XENETIC BIOSCIENCES, INC.**

**SCHEDULE II**

**VALUATION AND QUALIFYING ACCOUNTS**

**For the years ended December 31, 2014 and 2013**

| Valuation Allowance on Deferred Tax Assets | Balance Beginning of Period | Additions (Deductions) Charged to (from) Income Tax Expense | Other Changes to Valuation Allowance | Balance End of Period |
|---|---|---|---|---|
| 2014 | $ (9,521,260) | (4,252,149) | – | $ (13,773,409) |
| 2013 | $ (9,147,488) | (373,772) | – | $ (9,521,260) |

## ITEM 9 – CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

The Company, as reported in its Current Report filed on Form 8-K on April 10, 2014, changed its accountants to Ernst & Young LLP. The Company has no disagreements with the current or predecessor accountants on any accounting and financial disclosure matters.

## ITEM 9A – CONTROLS AND PROCEDURES

### Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of the end of the period covered by this Annual Report on Form 10-K.

Based on this evaluation our management, including our Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this Annual Report on Form 10-K, our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

### Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) of the Exchange Act. Management under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an assessment of the design and effectiveness of our internal control over financial reporting as of the end of the period covered by this Annual Report on Form 10-K. In making its assessment of internal control over financial reporting, management used the criteria set forth by the Committee of Sponsoring Organizations ("COSO") of the Treadway Commission in *Internal Control — Integrated Framework*. Based on this assessment, our management concluded that, as of the end of the period covered by this Annual Report on Form 10-K, our internal control over financial reporting was effective based on the criteria set forth by COSO of the Treadway Commission in *Internal Control — Integrated Framework*.

This annual report does not include an attestation report of our registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by our registered public accounting firm pursuant to an exemption for non-accelerated filers set forth in Section 989G of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

### Changes in Internal Control Over Financial Reporting

There have been no changes in our internal control over financial reporting that occurred during the period covered by this Annual Report on Form 10-K that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

**Limitations on Effectiveness of Controls and Procedures**

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. The Company's internal control over financial reporting includes those policies and procedures that:

(1) Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the Company's assets;
(2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that the Company's receipts and expenditures are being made only in accordance with authorizations of the Company's management and directors; and
(3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Management, including the Company's Chief Executive Officer and Chief Financial Officer, does not expect that the Company's internal controls will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of internal controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Also, any evaluation of the effectiveness of controls in future periods are subject to the risk that those internal controls may become inadequate because of changes in business conditions, or that the degree of compliance with the policies or procedures may deteriorate.

**ITEM 9B – OTHER INFORMATION**

None.

## PART III

### ITEM 10 – DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item is incorporated by reference from the Company's proxy statement for the 2015 annual meeting of stockholders or a Form 10-K/A, to be filed with the Securities and Exchange Commission within 120 days of the end of the Company's fiscal year ended December 31, 2014, except for certain information with respect to our executive officers, which is included in "Part I – Item 1" of this Annual Report on Form 10-K under the caption "Directors and Executive Officers".

### ITEM 11 – EXECUTIVE COMPENSATION

The information required by this Item is incorporated by reference from the Company's proxy statement for the 2015 annual meeting of stockholders or a Form 10-K/A, to be filed with the Securities and Exchange Commission within 120 days of the end of the Company's fiscal year ended December 31, 2014.

### ITEM 12 – SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this Item is incorporated by reference from the Company's proxy statement for the 2015 annual meeting of stockholders or a Form 10-K/A, to be filed with the Securities and Exchange Commission within 120 days of the end of the Company's fiscal year ended December 31, 2014.

### ITEM 13 – CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this Item is incorporated by reference from the Company's proxy statement for the 2015 annual meeting of stockholders or a Form 10-K/A, to be filed with the Securities and Exchange Commission within 120 days of the end of the Company's fiscal year ended December 31, 2014.

### ITEM 14 – PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this Item is incorporated by reference from the Company's proxy statement for the 2015 annual meeting of stockholders or a Form 10-K/A, to be filed with the Securities and Exchange Commission within 120 days of the end of the Company's fiscal year ended December 31, 2014.

## PART IV

## ITEM 15 – EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following is filed as part of this Annual Report on Form 10-K:

- *Consolidated Financial Statements:* The consolidated financial statements and report of independent registered public accounting firm required by this item are included in Part II, Item 8;

- *Financial Statement Schedules:* Schedule II, Valuation and Qualifying Accounts, is included in Part II, Item 8.

All other schedules are omitted because they are not applicable or not required, or because the required information is shown either in the consolidated financial statements or in the notes thereto.

(b) **Exhibits:** The attached list of exhibits in the "Exhibit Index" immediately preceding the exhibits to this Annual Report on Form 10-K is incorporated herein by reference in response to this item.

**SIGNATURES**

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

XENETIC BIOSCIENCES, INC.

April 15, 2015 By: /s/ MICHAEL SCOTT MAGUIRE

Michael Scott Maguire

*Chief Executive Officer and President*

**POWER OF ATTORNEY AND SIGNATURES**

We, the undersigned officers and directors of Xenetic Biosciences, Inc., hereby severally constitute and appoint Michael Scott Maguire and Colin William Hill, and each of them singly, our true and lawful attorneys, with full power to them and each of them singly, to sign for us in our names in the capacities indicated below, all amendments to this report, and generally to do all things in our names and on our behalf in such capacities to enable Xenetic Biosciences, Inc. to comply with the provisions of the Securities Exchange Act of 1934, as amended, and all requirements of the Securities and Exchange Commission.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated below on the 15th day of April, 2015.

| **Signature** | **Title(s)** |
|---|---|
| /S/ MICHAEL SCOTT MAGUIRE<br>Michael Scott Maguire | President, Chief Executive Officer and Director<br>(Principal Executive Officer) |
| /S/ COLIN WILLIAM HILL<br>Colin William Hill | Chief Financial Officer<br>(Principal Financial and Accounting Officer) |
| /S/ FIRDAUS JAL DASTOOR FCS<br>Firdaus Jal Dastoor FCS | Director |
| /S/ ARTUR ISAEV<br>Artur Isaev | Director |
| /S/ ROMAN KNYAZEV<br>Roman Knyazev | Director |
| /S/ MARK LEUCHTENBERGER<br>Mark Leuchtenberger | Director |
| /S/ DR. TIMOTHY R. COTE<br>Dr. Timothy R. Coté | Director |
| /S/ DARLENE DEPTULA-HICKS<br>Darlene Deptula-Hicks | Director |

**EXHIBIT INDEX**

| EXHIBIT NUMBER | DESCRIPTION |
|---|---|
| 3.1 | Articles of Incorporation (1) |
| 3.2 | Certificate of Amendment to Articles of Incorporation (2) |
| 3.3 | Certificate of Amendment to Articles of Incorporation (3) |
| 3.4 | Bylaws (1) |
| 9.1 | Scheme of Arrangement (including the Equivalent Document) (4) |
| 9.2 | Announcement of Recommended Offer for shares of Xenetic Biosciences plc (5) |
| 9.3 | Agreement of Conveyance, Transfer and Assignment of Subsidiaries and Assumption of Obligations (6) |
| 10.01 * | Form of FDS Pharma Intellectual Property Assignment, dated December 2014 |
| 10.02 * | Form of SynBio LLC Warrant to Purchase Common Stock, dated December 2014 |
| 10.03 * | Form of Serum Institute of India Limited Warrant to Purchase Common Stock, dated December 2014 |
| 10.04 * | Form of Firdaus Jal Dastoor Warrant to Purchase Common Stock, dated December 2014 |
| 31.1 * | Certification of Michael Scott Maguire, Chief Executive Officer, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 |
| 31.2 * | Certification of Colin W. Hill, Chief Financial Officer, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 |
| 32.1 * | Certifications of Michael Scott Maguire, Chief Executive Officer, and Colin William Hill, Chief Financial Officer, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101 * | The following materials from Xenetic Biosciences, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2014, formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Comprehensive Loss, (iii) the Consolidated Statements of Cash Flows, (iv) the Consolidated Statements of Changes in Stockholders' Equity, and (v) Notes to Consolidated Financial Statements. |

_____

(1) Incorporated by reference to Registration Statement on Form S-1 filed November 21, 2011
(2) Incorporated by reference to Current Report on Form 8-K filed February 12, 2013
(3) Incorporated by reference to Current Report on Form 8-K filed February 27, 2013
(4) Incorporated by reference to Current Report on Form 8-K filed November 25, 2013
(5) Incorporated by reference to Current Report on Form 8-K filed November 13, 2013
(6) Incorporated by reference to Annual Report on Form 10-K filed November 27, 2013
* Exhibit filed with this report

**EXHIBIT 10.1**

Dated 2014

**(1) DIMITRY GENKIN**

**AND**

**(2) FDS PHARMA**

**AND**

**(3) LIPOXEN TECHNOLOGIES LIMITED**

**AND**

**(4) XENETIC BIOSCIENCES INC**

# INTELLECTUAL PROPERTY ASSIGNMENT

KEYSTONE LAW
53 Davies Street, London W1K 5JH
DX: 2307 Victoria
Telephone: 020 7152 6550
Fax: 0845 458 9398
enquiries@keystonelaw.co.uk
www.keystonelaw.co.uk

THIS DEED is dated 2014

PARTIES

(1) DMITRY GENKIN a citizen of the Russian Federation with an address of ("the **First Assignor");**

(2) FDS PHARMA a limited partnership formed under the laws of England and Wales with limited partnership number LP005073 whose registered office is at 82 St John Street, London, EC1M 4JN (the **"Second Assignor"/"FDS")**

together the **"Assignors"**

(3) LIPDXEN TECHNOLOGIES LIMITED incorporated and registered in England and Wales with company number 03401495 whose registered office is at 5th Floor,15 Whitehall, London, SW1A 2DD ("the **Assignee"/"Lipoxen");**

(4) XENETIC BIOSCIENCES INC. a Nevada corporation with its principal office and place of business at 99 Hayden Ave, Suite 230, Lexington, MA and the ultimate parent company of the Assignee **("Xenetic");** and

**BACKGROUND**

(A) Lipoxen and FDS entered into an Agreement for the Provision of Manufacturing and Clinical Development Services (the **"PMCDS")** dated 10 October 2005 by which FDS was to be granted Milestone Shares through several Milestone Allotments set forth in Schedule 2 of the PMCDS in return for services;

(B) The Parties having now agreed that all obligations under the PMCDS have been discharged or are hereby varied, the PMCDS is deemed to have expired pursuant to Clause 10.1 of the PMCDS;

(C) On or about 2 June 2009 the Assignors and the Assignee entered into an oral agreement for the assignment of Intellectual Property Rights on the same terms as provided herein;

(D) The Assignee entered into a Collaboration, Licence and Development Agreement dated 11 November 2009 with Pharmasynthez ZAO and a separate Agreement on Co-Development and the Terms of Exclusive License dated 4 August 2011 with Synbio LLC (collectively, the **"Pharms and Synbio Agreements");**

(E) The Assignors have and continue to take part in work on behalf of Pharmsynthez LAO and Synbio LLC and through this work have provided and will provide an inventive contribution to the Lipoxen Technology;

(F) The Assignors continue to work on the Lipoxen Technology outside the scope of the Pharms and Synbio Agreements and the PMCDS and thereby to contribute inventive input into the Lipoxen Technology;

(G) in consideration of the grant of the Shares provided by Xenetic as set out in Clause 4 herein to the Second Assignor, the Assignors wish to assign to the Assignee all right, title and interest they may have in the Intellectual Property Rights created by either of them during the course of their work on behalf of, or in collaboration with, the Assignee;

(H) The Parties wish to confirm in writing the variation to and expiry of the PMCDS, the issuance of Shares in full satisfaction of the Assignee's obligation under the PMCDS and the oral agreement of June 2009 regarding the assignment of Intellectual Property Rights from the Assignors to the Assignee.

**IT IS AGREED** as follows:

**1. INTERPRETATION**

The following definitions and rules of interpretation apply in this Deed.

1.1 Definitions:

**Agreement:** means this agreement between the Parties set out above and executed as a Deed.

**Arising IP Rights:** means any and all Intellectual Property Rights arising from or in relation to the work carried out by the Assignors by or on behalf of the Assignee pursuant to the Pharms and Synbio Agreements.

**Assigned IP Rights:** means the Intellectual Property Rights hereby assigned by the Assignors to the Assignee pursuant to this Agreement.

**Business Day:** means a day other than a Saturday, Sunday or public holiday in England when banks in London are open for business.

**Confidential Information:** means any and all data, results, know-how, show-how, software, algorithms, trade secrets, plans, forecasts, analyses, evaluations, research, technical information, business information, financial information, business plans, strategies, customer lists, marketing plans or other information whether oral, in writing, in electronic form or in any other form, and any physical items, compounds, components or other materials disclosed before, on or after the date of the PMCDS by one party to the other party which is either designated as confidential or which is of a confidential nature.

**Delivery Materials:** means the most up-to-date and complete data, media, documents, reports and any other information or writing in the Assignors' possession relating to the Assigned IP Rights.

**FDS Contracts:** means any contract between FDS and a third party relating to the Services (as defined in the PMCDS) including without limitation the Cell Line Agreement, the CRO Agreement and the Sub-contracting Agreements (as defined in the PMCDS).

**Foreground:** means all Intellectual Property Rights created or arising in the course of the provision of the Services (as defined in the PMCDS) including but not limited to:

(a) the results of any and all information, data and know how generated or arising out of the Clinical Trials (as defined in the PMCDS) and all Intellectual Property Rights relating thereto;

(b) any and all Intellectual Property Rights created by or on behalf of FDS relating to conjugates of (i) PSA and insulin; and (ii) PSA and interferon;

(c) the Master Cell Lines (as defined in the PMCDS);

(d) any and all unmodified or modified derivatives, progeny or other substance created or generated through use of the Master Cell Lines by or on behalf of FDS in the course of the provision of the Services and all Intellectual Property Rights relating thereto; and

(e) any and all Intellectual Property Rights created by or on behalf of FDS relating to the method of manufacturing insulin and interferon from the Master Cell Lines and the process of creating conjugates of PSA and insulin and PSA and interferon.

**ImuXen Patents:** means the Patents set out in Schedule 2 to this Agreement including any continuations, continuations in part, extensions, reissues, divisions, and any patents, supplementary protection certificates and similar rights that are based on or derive priority from the foregoing.

**Intellectual Property Rights:** means patents, utility models, rights to inventions, copyright and neighbouring and related rights, trade marks and service marks, business names and domain names, rights in get-up and trade dress, goodwill and the right to sue for passing off or unfair competition, rights in designs, database rights, rights in data, rights to use, and protect the confidentiality of, confidential information (including know-how and trade secrets) and all other intellectual property rights, in each case whether registered or unregistered and including all applications and rights to apply for and be granted, renewals or extensions of, and rights to claim priority from, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world.

**Lipoxen Background:** means all Intellectual Property Rights belonging to or licensed to Lipoxen at the Commencement date of the PMCDS including without limitation the PolyXen Patents.

**Lipoxen Technology:** means

(a) the ImuXen Technology namely the advanced platform vaccine delivery technology that employs novel liposome constructs to boost the effectiveness of DNA, protein and polysaccharide vaccines that is described in detail in the ImuXen Patents;

(b) the PolyXen Technology namely the multifaceted platform technology that employs PSA to prolong the active life and improve the pharmacokinetics of therapeutic proteins and peptides, as well as conventional drugs, that is described in detail in the PolyXen Patents;

(c) the PSA Technology relating to the manufacture of PSA and/or PSA Derivatives; and

(d) the Oncohist Technology means the multifaceted platform technology histone H1.3 that allows the development of anticancer drugs as described in detail in the Oncohist Patents.

**Oncohist Patents:** means the Patents set out in Schedule 3 to this Agreement including any continuations, continuations in part, extensions, reissues, divisions, and any patents, supplementary protection certificates and similar rights that are based on or derive priority from the foregoing.

**Parties:** means Dimitry Genkin, FDS, Lipoxen and Xenetic and "Party" shall mean one of them.

**Pharms:** means Pharmsynthez ZAO.

**PMCDS:** means the Agreement for the Provision of Manufacturing and Clinical Development Services between FDS and the Assignee dated 10 October 2005.

**PSA:** means any polymer containing tow or more sialic acid residues, including the natural polymer polysialic acid, the chemical formula for which is set out in Schedule **4** to this Agreement.

**PSA Derivatives:** means any derivative of POLYSIALIC ACID, which shall include but not be limited to, covalent, non-covalent or reversible complexes which involve one or more sialic acid residue.

**PolyXen Patents:** means the Patents set out in Schedule 5 to this Agreement including any continuations, continuations in part, extensions, reissues, divisions, and any patents, supplementary protection certificates and similar rights that are based on or derive priority from the foregoing.

**Shares:** means the three million two hundred and fifty-five thousand, seven hundred and eighty-four (3,244,784) common shares of Xenetic (XBIO) stock.

**Synbio:** means Synbio **LLC.**

**2. OWNERSHIP AND ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS**

2.1 The Assignors hereby assign to the Assignee absolutely with full title guarantee all right, title and interest in and to any and all Intellectual Property Rights created by the Assignors jointly or separately during the course of their work on behalf of, or in collaboration with, the Assignee or otherwise which relates to the Lipoxen Technology. This includes, but is not limited to:

2.1.1 all Intellectual Property Rights with respect to the work which is within the scope of the PMCDS;

2.1.2 the Foreground;

2.1.3 the Arising IPR;

2.1.4 all Intellectual Property Rights created outside the scope of the PMCDS, the Pharms and Synbio Agreements and which is related to:

2.1.4.1 the use of histone HI, including, but not limited to Histone HI .4, for the siRNA delivery;

2.1.4.2 the use of Histone generally as a delivery platform;

2.1.4.3 the use of PSA as a delivery platform for the treatment of central nervous system ("CNS") syndromes;

2.1.4.4 the use of Xenetic Intellectual Property Rights for the development of treatments for new indications; and

2.1.4.5 the use of PSA as a delivery platform of a therapeutic across the blood brain barrier.

2.1.5 any other Intellectual Property Rights related to the Lipoxen Technology. collectively, the **"Assigned IP Rights".**

2.2 The assignment includes all right title and interest to:

2.2.1 any patent application or right to apply for a patent:

2.2.1.1 the right to claim priority from and to prosecute and obtain grant of patent; and

2.2.1.2 the right to file divisional applications based thereon and to prosecute and obtain grant of patent on each and any such divisional application.

2.2.2 in respect of each and any invention disclosed in a patent, the right to file an application, claim priority from such application, and prosecute and obtain grant of patent or similar protection in or in respect of any country or territory in the world;

2.2.3 the right to extend to or register in or in respect of any country or territory in the world each and any patent, and each and any of applications comprised in a patents or filed as aforesaid, and to extend to or register in, or in respect of, any country or territory in the world any patent or like protection granted on any of such applications.

2.2.4 the absolute entitlement to any patents granted pursuant to any of the applications comprised in a patent or filed as aforesaid.

2.3 The assignment includes the right to bring, make, oppose, defend, appeal proceedings, claims or actions and obtain relief (and **to** retain any damages recovered) in respect of any infringement, or any other cause of action arising from ownership, of any of the Assigned IP Rights, whether occurring before on or after the date of this Agreement.

**3. FURTHER ASSURANCES**

3.1 The Assignors appoint the Assignee to be their attorney in their name and on their behalf to execute documents, use the Assignors' names and do all things that are necessary or desirable for the Assignee to obtain for itself or its nominee the full benefit of Clauses 2 and 3.

3.2 This power of attorney is irrevocable and is given by way of security to secure the performance of the Assignors' obligations under this Clause and the proprietary interest of the Assignee in the Assigned IP Rights and so long as such obligations of the Assignors remain undischarged, or the Assignee has such interest, the power may not be revoked by the Assignors, save with the consent of the Assignee.

3.3 The Assignee may, in any way it thinks fit and in the name and on behalf of the Assignors:

3.3.1 take any action that this Agreement requires the First or Second Assignor to take;

3.3.2 exercise any rights which this Agreement gives to the First or Second Assignor; and

3.3.3 appoint one or more persons to act as substitute attorney(s) for the First or Second Assignor and to exercise such of the powers conferred by this power of attorney as the Assignee thinks fit and revoke such appointment.

3.4 The Assignors undertake to ratify and confirm everything that the Assignee and any substitute attorney does or arranges or purports to do or arrange in good faith in exercise of any power granted under this clause.

3.5 To the extent that any rights, title and interests, including all Intellectual Property Rights anywhere in the world, whether registered or not, and all benefits and rights to sue or obtain relief for any past, current or future infringement or violation of such rights, in and to the Assigned IP Rights (or any part thereof) in any country of the world may remain or become vested in the First or Second Assignor they shall and hereby agree, at the Assignee's prior written request and expense, to irrevocably assign, transfer and convey and/or undertake to procure that such related corporations shall irrevocably assign, transfer and convey, absolutely and unconditionally, to the Assignee, the said right, title and interest by way of agreement in a form substantially similar to the assignment provisions of this Agreement save that no payment shall be made by the Assignee in addition to that made pursuant to this Agreement in consideration of the said confirmatory assignment, transfer, conveyance or procurement thereof.

3.6 The Assignors agree and confirm that, other than the Shares, no additional sums, royalties, payments and/or other charges of any kind shall be directly payable by the Assignee to the Assignors under this Agreement for the assignment and conveyance of the Assigned IP Rights.

3.7 At the Assignee's prior written request and expense, the Assignors each undertake to do any and all acts and execute any and all documents in such manner and at such location as may be required by the Assignee in the Assignee's discretion to:

3.7.1 protect, perfect or enforce any of the rights, privileges and entitlements granted or promised to the Assignee by this Agreement; and

3.7.2 enable the Assignee to pursue or prosecute any application in respect of the Assigned IP Rights to registration in favour of the Assignee or such other party as the Assignee may direct. For the purposes of the provisions above and without prejudice to its generality, the Assignors each hereby undertake at the request of the Assignee to sign and execute such formal assignment documents as may be required by the relevant registries anywhere in the world, in the form required by such registry.

3.8 The Assignors each undertake to reasonably cooperate with the Assignee in any proceedings for infringement of any Assigned IP Rights, including providing such information as the Assignee may reasonably request, provided that the Assignee shall reimburse any costs or expenses incurred by the Assignors in providing such cooperation.

3.9 The Assignors hereby authorise the recording of this Agreement with the relevant patent or other Intellectual Property Rights registries anywhere in the world by agents appointed by the Assignee.

3.10 The Assignors shall upon a written request from the Assignee or Xenetic, furnish, deliver, divulge, transfer, disclose, impart or otherwise communicate to the Assignee, the most up-to-date and complete data, media, documents, reports and any other information or writing in their possession and/or control relating to the Assigned IP Rights (the "Delivery **Materials").**

3.11 The Assignors shall at the request of the Assignee:-

3.11.1 provide the Assignee, free of charge, with up to 90 days of consultancy services at the Assignee's premises in the UK or the US to assist the Asssignee to understand the Assigned IP Rights; and/or

3.11.2 provide samples, in a form reasonably satisfactory to the Assignee, of any physical materials (including cell lines) created or developed by either of the Assignors either (a) pursuant to the PMCDS; or (b) otherwise and which relate directly to the Lipoxen Technology. Title to any such physical deliverables will pass to the Assignee on receipt by the Assignee of the relevant samples.

3.12 A failure to provide the Delivery Materials within 90 days of such a written request or to comply with the provisions of Clause 3.11 of this Agreement will result in a claim
for damages against the Assignors up to a sum equivalent to the value of the Shares issued pursuant to this Agreement.

**4. CONSIDERATION FOR ASSIGNMENT**

4.1 In consideration for assigning the Assigned IP Rights to the Assignee (which is owned by Xenetic) and pursuant to Clause 5.6 of the PMCDS, the Second Assignor, which is owned in part by the First Assignor, shall be granted three million two hundred and fifty-five thousand, seven hundred and eighty-four (3,244,784) common shares of Xenetic (XBIO) stock (the "Shares") by way of board grant to properly effect such issue of stock and ratify this Agreement.

4.2 In connection with the Share issuance, the Second Assignor represents and warrants to Xenetic and the Assignee that all the representations and warranties set forth on Schedule **1** hereto are true and correct in all respects.

4.3 Additionally, in connection with the Shares issuance, the Second Assignor agrees to abide by the requirements of Xenetic set forth in Schedule 1 hereto.

4.4 The Assignors have each reviewed with their own tax advisors the tax consequences of the transaction as contemplated by this Agreement. With respect to such matters, the Assignors warrant and represent that, individually and jointly, they are relying solely on advice received by them from their own tax advisors and not on any written or oral statements or representations of the Company or any of its agents or advisors. The Assignors understand that, individually and jointly, they shall be solely responsible for any tax liability, charge or other impost made upon them that may arise as a consequence of this Agreement and hereby fully indemnify the Company and the Assignee against any such claim howsoever arising.

4.5 The Assignors hereby agree that the payment referred to in Clause 4.1 shall extinguish any and all remaining obligations under Clause 5 of the PMCDS and that upon the grant of the Shares, no further consideration will be due to either of them pursuant to the PMCDS or otherwise.

**5. Expiry of the PMCDS**

5.1 The Parties hereby agree a variation to the PMCDS to provide that those obligations under the PMCDS that remain as at the date of this Agreement still to be discharged are hereby deemed to have been discharged and that, upon the share issue pursuant to Clause 4.1 above, the PMCDS will expire pursuant to Clause 10.1 of that Agreement.

5.2 Within 90 days of the expiry of the PMCDS, the Second Assignor shall complete the following acts set out at clause 11.1 of the PMCDS to the extent they have not already been completed:

5.2.1 provide to the Assignee a detailed report setting out the progress it has made with the Development Programme (as defined in the PMCDS);

5.2.2 provide to the Assignee all data (including without limitation clinical trials data) know-how and materials generated by or on behalf of the Second Assignor in connection with the provision of Services (as defined in the PMCDS) and do all such further things as are necessary or desirable to ensure that the Assignee is entitled and able to utilise all such data, know-how and materials;

5.2.3 hereby assign (to the extent title has not previously passed pursuant to the PMCDS) to the Assignee all of the Foreground;

5.2.4 return or (at the Assignee's option) destroy all other data, know-how and materials provided to the Second Assignor by the Assignee or generated by the Second Assignor in connection with the provision of Services as defined in PMCDS.

5.3 All rights or remedies of each of the Parties arising from any breach of the PMCDS shall continue to be enforceable.

5.4 The Second Assignor shall no longer be licensed to use or otherwise exploit in any way, either directly or indirectly the Lipoxen Background or the Foreground and the Second Assignor shall and shall procure that its Appointed CRO shall, forthwith cease all activities requiring a licence from the Assignee.

5.5 At the written request of the Assignee, the Second Assignor shall assign to the Assignee any one or all of the FDS Contracts.

5.6 The following clauses of the PMCDS shall continue in full force and effect: 1, 2.13, 5.11, 5.12, 6.1, 6.4, 6.5, 7.1, 7.5, 8,9.

5.7 Each of the Assignee and the Second Assignor shall return to the other within a reasonable period of time all Confidential Information and any copies thereof disclosed to it by the other party.

**6. WARRANTIES AND INDEMNITIES**

6.1 The Assignors warrant and represent jointly and severally to the Assignee and Xenetic that:-

6.1.1 jointly or separately they are the sole legal and beneficial owners of, and own all the rights and interests in the Assigned IP Rights;

6.1.2 neither of the assignors has prior to the date of this Agreement and will not thereafter assign or licence or purport to assign or licence any of the Assigned IP Rights to any third party;

6.1.3 neither of the Assignors is aware of any infringement or likely infringement of, or any challenge or likely challenge to the Assigned IP Rights;

6.1.4 the Assignors will notify the Assignee in writing if any of the Delivery Materials includes any materials which are proprietory to or the confidential information of Pharms or Synbio;

6.1.5 the Assignors have disclosed to the Assignee any and all FDS Contracts in existence as at the date of this Agreement;

6.1.6 each of the Assignors will comply with the restrictions set out in Clause 6.6;

6.1.7 the Assignors have disclosed to the Assignee any and all relationships with third parties (including employment, consultancy or other agreements) which would prevent or restrict either of them from assigning to the Assignee any and all Intellectual Property Rights created by either of them relating to the Lipoxen Technology; and

6.1.8 so far as either of them is aware, exploitation of the Assigned **IP** Rights will not infringe the rights of any third party.

6.2 The Assignors jointly and severally shall indemnify each of the Assignee and Xenetic against all liabilities, costs, expenses, damages or losses (including any direct or indirect consequential losses, loss of profit, loss of reputation and all interest, penalties and legal costs (calculated on a full indemnity basis) and all other reasonable professional costs and expenses) suffered or incurred by the Assignee arising out of or in connection with:

6.2.1 any breach by the First or Second Assignor of the warranties in Clause 6.1 above and Schedule 1 hereto;

6.2.2 the enforcement of this Agreement; and

6.2.3 any claim brought against either the Assignee or Xenetic or both of them by Pharms or Synbio arising out of the acts or omissions of the First or Second Assignors in relation to the Pharms and Synbio Agreements.

6.3 Nothing in this clause shall restrict or limit the Assignee's or Xenetic's general obligation at law to mitigate a loss it may suffer or incur as a result of an event that may give rise to a claim under this indemnity.

6.4 This indemnity shall apply whether or not the Assignee or Xenetic has been negligent or at fault.

6.5 The Assignors each agree not to sue, commence, voluntarily aid in any way, prosecute or cause to be commenced or prosecuted against the Assignee, any of its Group companies, its assigns, transferees, representatives, principals, agents, officers or directors any action, suit or other proceeding concerning the Assigned IP Rights in this jurisdiction or any other.

6.6 The Assignors will not do or authorise to be done any act that would, if carried out in the United Kingdom, amount to an infringement of the ImuXen Patents, the PolyXen Patents or the Oncohist Patents.

**7. GOVERNING LAW AND JURISDICTION**

7.1 This Agreement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with the law of England and Wales.

7.2 Each Party irrevocably agrees that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this Agreement or its subject matter or formation (including non-contractual disputes or claims).

## 8. GENERAL

**Force majeure**

8.1 No Party shall have any liability or be deemed to be in breach of this Agreement for any delays or failures in performance of this Agreement that result from circumstances beyond the reasonable control of that Party. The Party affected by such circumstances shall promptly notify the other Party in writing when such circumstances cause a delay or failure in performance and when they cease to do so.

**Amendment**

8.2 No variation of this Agreement shall be effective unless it is in writing and signed by the parties (or their authorised representatives).

**Third party rights**

8.3 No one other than a party to this Agreement, their successors and permitted assignees, shall have any right to enforce any of its terms.

**Waiver**

8.4 No failure or delay by a party to exercise any right or remedy provided under this Agreement or by law shall constitute a waiver of that or any other right or remedy, nor shall it preclude or restrict the further exercise of that or any other right or remedy. No single or partial exercise of such right or remedy shall preclude or restrict the further exercise of that or any other right or remedy.

**Invalid clause**

8.5 If any provision or part-provision of this Agreement is or becomes invalid, illegal or unenforceable, it shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable. If such modification is not possible, the relevant provision or part-provision shall be deemed deleted. Any modification to or deletion of a provision or part-provision under this Clause shall not affect the validity and enforceability of the rest of this Agreement.

**No agency**

8.6 Save for the provisions of Clause 3 above, no Party shall act or describe itself as the agent of the other nor shall it make or represent that it has authority to make any commitments on the other's behalf.

**Interpretation**

8.7 In this Agreement:

8.7.1 the headings are used for convenience only and shall not affect its interpretation;

8.7.2 references to persons shall include incorporated and unincorporated persons; references to the singular include the plural and vice versa; and references to the masculine include the feminine;

8.7.3 references to clauses and Schedules mean clauses of and schedules to this Agreement unless otherwise specified; and

8.7.4 references to the grant of "exclusive" rights shall mean that the person granting the rights shall neither grant the same rights (in the same field and territory) to any other person, nor exercise those rights itself.

**Notices**

8.8 Any notice given to a party under or in connection with this Agreement shall be in writing and shall be:

8.8.1 In the case of the Assignor, delivered by hand or pre-paid first-class post or other next working day delivery service at the address above or any subsequent address as may be notified by the Assignor to the Assignee;

8.8.2 In the case of the Assignee:

8.8.2.1 delivered by hand or by pre-paid first-class post or other next working day delivery service at its registered office (if a company) or its principal place of business (in any other case); or

8.8.2.2 sent by fax to its main fax number.

8.9 Any notice shall be deemed to have been received:

8.9.1 if delivered by hand, on signature of a delivery receipt;

8,9.2 if sent by pre-paid first-class post or other next working day delivery service, at 9.00 am on the second Business Day after posting.

8.9.3 if sent by fax, at 9.00 am on the next Business Day after transmission.

8.10 Clause 8.9 does not apply to the service of any proceedings or other documents in any legal action or, where applicable, any arbitration or other method of dispute resolution.

**Further action**

8.11 Each Party agrees to execute, acknowledge and deliver such further instruments and do all further similar acts as may be necessary or appropriate to carry out the purposes and intent of this Agreement.

**Announcements**

8.12 No Party shall make any press or other public announcement concerning any aspect of this Agreement, or make any use of the name of the other Party in connection with or in consequence of this Agreement. without the prior written consent of the other Party.

**Entire agreement**

8.13 This Agreement constitutes the entire agreement between the parties and supersedes and extinguishes all previous agreements, promises, assurances. warranties. representations and understandings between them, whether written or oral, relating to its subject matter.

8.14 Each party agrees that it shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this agreement. Each party agrees that it shall have no claim for innocent or negligent misrepresentation or negligent misstatement based on any statement in this agreement.

This Agreement has been executed as a deed and is delivered and takes effect on the date stated at the beginning of it:

Executed as a deed by DIMITRY GENKIN. in the presence of

/s/ Kirill Surkov

Name, address and occupation of witness DIMITRY GENKIN

Executed as a deed by FDS PHARMA, acting by [name of first Partner], a partner and [name of second partner]. a partner, in the presence of

/s/ Kirill Surkov /s/ DIMITRY GENKIN

Name, address and occupation of witness Partner

Executed as a deed by Lipoxen Technologies Limited. acting by M. Scott Maguire, a director and [name of second director]. a director/secretary. in the presence of

/s/

Name, address and occupation of witness Director/Secretary

Executed as a deed by Xenetic Biosciences INC, acting by [name of first director]. a director and [name of second director], a director/secretary. in the presence of

/s/

Name, address and occupation of witness Director/Secretary

**Schedule 1**

**Representations, Warranties and Covenants of FDS**

1. Organization; Authority. FDS is an entity duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization with the requisite limited partnership power and authority to enter into and to consummate the transactions contemplated by this Agreement and otherwise to carry out its obligations hereunder. The execution and delivery of this Agreement by FDS and performance by FDS of the transactions contemplated by this Agreement have been duly authorized by all necessary limited partnership or other applicable like action, on the part of FDS. This Agreement has been duly executed by FDS, and when delivered by FDS in accordance with the terms hereof, will constitute the valid and legally binding obligation of FDS, enforceable against it in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium, liquidation or similar laws relating to, or affecting generally the enforcement of, creditors' rights and remedies or by other equitable principles of general application.

2. No Conflicts. The execution, delivery and performance by FDS of this Agreement and the consummation by FDS of the transactions contemplated hereby will not (i) result in a violation of the organizational documents of FDS, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which FDS is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to FDS, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of FDS to perform its obligations hereunder.

3. Investment Intent. FDS understands that the Shares are "restricted securities" and have not been registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Shares as principal for its own account and not with a view to, or for distributing or reselling such Shares or any part thereof in violation of the Securities Act or any applicable state securities laws. FDS is acquiring the Shares hereunder in the ordinary course of its business. FDS does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Shares (or any securities which are derivatives thereof) to or through any person or entity; FDS is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

4. Investor Status. At the time FDS was offered the Shares, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

5. General Solicitation. FDS is not purchasing the Shares as a result of any advertisement, article, notice or other communication regarding the Shares published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

6. Experience of FDS. FDS, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Shares, and has so evaluated the merits and risks of such investment. FDS is able to bear the economic risk of an investment in the Shares and, at the present time, is able to afford a complete loss of such investment.

7. Access to Information. FDS acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of Xenetic concerning the terms and conditions of the offering of the Shares and the merits and risks of investing in the Shares; (ii) access to information about Xenetic and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that Xenetic possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. FDS has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Shares.

8. Brokers and Finders. No person will have, as a result of the transactions contemplated by this Agreement, any valid right, interest or claim against or upon Xenetic or FDS for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of FDS.

9. Independent Investment Decision. FDS has independently evaluated the merits of its decision to purchase Shares pursuant to this Agreement. FDS understands that nothing in this Agreement or any other materials presented by or on behalf of Xenetic to it in connection with the purchase of the Shares constitutes legal, tax or investment advice. FDS has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Shares.

10. Reliance on Exemptions. FDS understands that the Shares being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that Xenetic is relying in part upon the truth and accuracy of, and FDS's compliance with, the representations, warranties, agreements, acknowledgements and understandings of FDS set forth herein in order to determine the availability of such exemptions and the eligibility of FDS to acquire the Shares.

11. No Governmental Review. FDS understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Shares or the fairness or suitability of the investment in the Shares nor have such authorities passed upon or endorsed the merits of the offering of the Shares.

12. Regulation M. FDS is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of Common Stock and other activities with respect to the Common Stock by FDS.

13. Residency. FDS's offices in which its investment decision with respect to the Shares was made are located at the address immediately below FDS name on its signature page hereto.

14. FDS understands that the Shares and any securities issued in respect of or exchange for the Shares, may be notated with one or all of the following legends:

"THE SHARES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933."

Any legend required by the securities laws of any state to the extent such laws are applicable to the Shares represented by the certificate, instrument, or book entry so legended.

**Schedule 2**

**ImuXen Patents**

Refer to Schedule 6 "Master Patent List", which includes the Schedule 2 "ImuXen Patents".

**Schedule 3**

**Oncohist Patents**

Refer to Schedule 6 "Master Patent List", which includes the Schedule 3 "Oncohist Patents".

**Schedule 4**

**PSA chemical formula**

[***]

**Schedule 5**

**PolyXen Patents**

Refer to Schedule 6 "Master Patent List", which includes the Schedule 5 "PolyXen Patents".

**Schedule 6**

**Master Patent List**

[***]

**Schedule 6**

**Master Patent List**

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**Schedule 6**

**Master Patent List**

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**Schedule 6**

**Master Patent List**

[***]

**Schedule 6**

**Master Patent List**

[***]

**EXHIBIT 10.2**

**THIS WARRANT HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF A REGISTRATION STATEMENT IN EFFECT WITH RESPECT TO THE SECURITIES UNDER SUCH ACT OR SATISFACTORY ASSURANCES TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED WITH RESPECT TO SUCH SALE, OFFER, PLEDGE OR HYPOTHECATION.**

**WARRANT TO PURCHASE COMMON STOCK**
**OF**
**XENETIC BIOSCIENCES, INC.**

Void after December 30**,** 2019

Date of Issuance: December 31, 2014

This certifies that, for value received, SynBio LLC, a company organized under the laws of the Russian Federation, or its registered assigns (the "Holder") is entitled, subject to the terms set forth below, to purchase from Xenetic Biosciences, Inc. (the "Company"), a Nevada corporation, six million and seven hundred forty-five thousand (6,745,000) shares of the Common Stock of the Company, par value $0.01 per share, (the "Warrant Shares"), upon surrender hereof, at the principal office of the Company referred to below and simultaneous payment therefor in lawful money of the United States, at the Exercise Price as set forth in Section 2 below.

Subject to the terms and conditions set forth herein, this Warrant shall be exercisable with respect to the vested portion as set forth in Section 1, in whole or in part, during the term commencing at December 31, 2016 and ending at December 30, 2019; provided, however, that the Holder shall not at any time exercise this Warrant if, and to the extent that, following such exercise, the Holder's and/or the Concert Party's aggregate holdings when taken together would exceed [***]% of the voting shares of the Company's capital stock, on a fully diluted basis, on the proposed date of exercise. "Concert Party" means each of the Holder, [***].

Upon issuance of this Warrant, the warrant dated August 4, 2011 issued by Lipoxen Plc to Synbio LLC (which warrant was assumed by the Company) shall be canceled automatically and be of no further force and effect.

The Holder further agrees that, in addition to any other applicable transfer restrictions in the applicable securities laws and agreements, without the Company's prior written consent, the Holder shall not transfer more than [***]% of the total number of securities of the Company held by it (calculated on an as converted to Common Stock basis) per rolling six months and more than [***]% of the securities of the Company held by it (calculated on an as converted to Common Stock basis) per rolling calendar year.

1. **Vesting**. The exercisability of this Warrant shall vest as follows:

   a. Following completion of Phase III human clinical trials for PSA-EPO in the Russian Federation, provided that this has occurred by the later of (i) [***] or (ii) the occurrence of the conditions specified in Section 1(b) below, [***]% of the Warrant Shares shall vest.

   b. Following the receipt of market approval for PSA-EPO in the Russian Federation and the Commonwealth of Independent States, provided that this occurs by [***], [***]% of the Warrant Shares shall vest.

c. Following the completion of Phase III Acute Myeloid Leukemia trials for OncoHist, provided that this has occurred by the later of (i) [***]or (ii) the occurrence of the conditions specified in Section 1(d) below, [***]% of the Warrant Shares shall vest.

d. Following the receipt of market approval for OncoHist for treatment of Acute Myeloid Leukemia in the Russian Federation and the Commonwealth of Independent States, provided that this occurs by [***], [***]% of the Warrant Shares shall vest.

2. **Exercise Price**. The Exercise Price per share of Common Stock at which this Warrant may be exercised shall be equal to the higher of $0.77 per share or the Fair Market Value on the date of issuance, as adjusted from time to time pursuant to Section 12 below (the "Exercise Price"). For purposes of this Section 2, the "Fair Market Value" of one share of Common Stock on the date of issuance shall have one of the following meanings:

a. if the Common Stock is listed on a recognized national stock exchange, such as The Nasdaq Stock Market LLC, the Fair Market Value shall be the Closing Price of the Common Stock on such recognized national stock exchange on the most recent trading day prior to the date of issuance of this Warrant; for the purposes of this Warrant, "Closing Price" means the final price at which one share of Common Stock is traded during any trading day;

b. if the Common Stock is not listed on a recognized national stock exchange but quoted in an over-the-counter market, the Fair Market Value shall be deemed to be the volume weighted average price per share of Common Stock for the 20 trading days ending on the day prior to the date of issuance of this Warrant;

c. if section (a) or (b) above is not applicable, the Fair Market Value shall equal the highest price per share which the Company could obtain on the date of issuance from a willing buyer (not a current employee or director) for shares of Common Stock sold by the Company, from authorized but unissued shares, as determined in good faith by the Company's Board of Directors.

3. **Exercise of Warrant**.

a. Subject to the terms and conditions set forth herein, the purchase rights represented by this Warrant are exercisable by the Holder in whole or in part, from time to time, by the surrender of this Warrant and the Notice of Exercise attached hereto as Exhibit A duly completed and executed on behalf of the Holder, at the office of the Company (or such other office or agency of the Company as it may designate by notice in writing to the Holder at the address of the Holder appearing on the books of the Company), upon payment in cash or by check acceptable to the Company of an amount equal to the aggregate Exercise Price of the Warrant Shares being purchased.

b. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above, and the person entitled to receive the shares of Common Stock issuable upon such exercise shall be treated for all purposes as the holder of record of such shares as of the close of business on such date. As promptly as practicable on or after such date, the Company shall issue and deliver to the person or persons entitled to receive the same a certificate or certificates for the number of shares issuable upon such exercise. In the event that this Warrant is exercised in part, the Company will execute and deliver a new Warrant of like tenor exercisable for the number of shares for which this Warrant may then be exercised.

4. **No Fractional Shares or Scrip**. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. In lieu of any fractional share to which the Holder would otherwise be entitled, the Company shall make a cash payment equal to the Exercise Price multiplied by such fraction.

5. **Replacement of Warrant**. On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction, or mutilation of this Warrant and, in the case of loss, theft, or destruction, on delivery of an indemnity agreement reasonably satisfactory in form and substance to the Company or, in the case of mutilation, on surrender and cancellation of this Warrant, the Company at its expense shall execute and deliver, in lieu of this Warrant, a new warrant of like tenor and amount.

6. **Rights of Stockholders**. Until the Holder exercises this Warrant and the Company issues the Holder Warrant Shares purchasable upon the exercise hereof, as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Common Stock or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a shareholder of the Company or any right to vote for the election of directors or upon any matter submitted to shareholders at any meeting thereof, or to give or withhold consent or assert dissenter's rights with respect to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value, or change of stock to no par value, consolidation, merger, conveyance, or otherwise) or to receive notice of meetings, or to receive dividends or subscription rights or otherwise.

7. **Market Stand-off**. The Holder agrees that the Holder shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of this Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Holder further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Holder shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Holder agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

8. **Representations and Warranties of the Holder.** By acceptance of this Warrant, the Holder represents and warrants to the Company as follows:

   a. Authority. The Holder represents that it has full power and authority to enter into this Warrant. This Warrant constitutes the Holder's valid and legally binding obligation, enforceable in accordance with its terms, except as may be limited by (i) applicable bankruptcy, insolvency, reorganization, or similar laws relating to or affecting the enforcement of creditors' rights and (ii) laws relating to the availability of specific performance, injunctive relief or other equitable remedies.

   b. No Conflicts. The execution, delivery and performance by the Holder of this Warrant and the consummation by the Holder of the transactions contemplated hereby will not (i) result in a violation of the organizational documents of the Holder, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Holder is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to the Holder, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of the Holder to perform its obligations hereunder.

c. Investment Intent. The Holder understands that this Warrant and the Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Holder is acquiring the Securities hereunder in the ordinary course of its business. The Holder does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Holder is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

d. Investor Status. At the time the Holder was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

e. General Solicitation. The Holder is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

f. Investment Experience. The Holder, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Holder is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

g. Access to Information. The Holder acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Holder has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

h. Brokers and Finders. No person will have, as a result of the transactions contemplated by this Warrant, any valid right, interest or claim against or upon the Company or the Holder for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Holder.

i. Independent Investment Decision. The Holder has independently evaluated the merits of its decision to purchase Securities pursuant to this Warrant. The Holder understands that nothing in this Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Holder has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

j. Reliance on Exemptions. The Holder understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Holder's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Holder set forth herein in order to determine the availability of such exemptions and the eligibility of the Holder to acquire the Securities.

k. No Governmental Review. The Holder understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

l. Regulation M. The Holder is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Holder.

m. Residency. The residency of the Holder (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

9. **Transfer of Warrant**.

a. Warrant Register. The Company will maintain a register (the "Warrant Register") containing the names and addresses of the Holder. The Holder may change its address as shown on the Warrant Register by written notice to the Company requesting such change. Any notice or written communication required or permitted to be given to the Holder may be delivered or given by mail to the Holder as shown on the Warrant Register and at the address shown on the Warrant Register. Until this Warrant is transferred on the Warrant Register, the Company may treat the Holder as shown on the Warrant Register as the absolute owner of this Warrant for all purposes, notwithstanding any notice to the contrary.

b. Warrant Agent. The Company may, by written notice to the Holder, appoint an agent for the purpose of maintaining the Warrant Register referred to in Section 9(a) above, issuing the Common Stock or other securities then issuable upon the exercise of this Warrant, exchanging this Warrant, replacing this Warrant, or any or all of the foregoing. Thereafter, any such registration, issuance, exchange, or replacement, as the case may be, shall be made at the office of such agent.

c. Compliance with Securities Laws.

i. The Warrant and the Warrant Shares are characterized as "restricted securities" under the Securities Act inasmuch as they are being acquired from the Company in a transaction not involving a public offering, and that under the Securities Act and applicable regulations thereunder, such securities may be resold without registration under the Securities Act only in certain limited circumstances. In this connection, the Holder represents that it is familiar with the Securities and Exchange Commission ("SEC") Rule 144, as presently in effect, and understands the resale limitations imposed thereby and by the Securities Act. The Company is under no obligation to register any of the securities sold hereunder. No public market now exists for this Warrant or the Warrant Shares and that it is uncertain whether a public market will ever exist for this Warrant or the Warrant Shares.

ii. This Warrant and all certificates for the Warrant Shares issued upon exercise hereof shall be stamped or imprinted with legends in substantially the following form (in addition to any legend required by state securities laws):

> "THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. THE SECURITIES MAY NOT BE SOLD OR OFFERED FOR SALE IN THE ABSENCE OF (A) AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER SUCH ACT, (B) A "NO ACTION" LETTER OF THE SECURITIES AND EXCHANGE COMMISSION WITH RESPECT TO SUCH SALE OR OFFER OR (C) SATISFACTORY ASSURANCES TO THE CORPORATION THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR OFFER.
>
> THE SECURITIES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE, INCLUDING A LOCK-UP PERIOD IN THE EVENT OF A PUBLIC OFFERING, AS SET FORTH IN THE WARRANT PURSUANT TO WHICH THESE SHARES WERE ISSUED, A COPY OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE COMPANY."

d. Disposition of the Holder's Rights.

i. Transferability. This Warrant shall not be transferred or assigned in whole or in part by Holder and any attempt by Holder to transfer or assign any rights, duties or obligations that arise under this Warrant shall be void. Any transfer of the Warrant Shares issuable upon exercise of this Warrant (the "Securities") must be in compliance with all applicable securities laws. The Holder agrees not to make any sale, assignment, transfer, pledge or other disposition of all or any portion of the Securities, or any beneficial interest therein, unless and until the transferee thereof has agreed in writing for the benefit of the Company to take and hold such Securities subject to, and to be bound by, the terms and conditions set forth in this Warrant to the same extent as if the transferee were the original Holder hereunder, and (A) such Holder shall have given prior written notice to the Company of such Holder's intention to make such disposition and shall have furnished the Company with a detailed description of the manner and circumstances of the proposed disposition, (B) the transferee shall have confirmed to the satisfaction of the Company in writing, substantially in the form of Exhibit A-1, that the Securities are being acquired (i) solely for the transferee's own account and not as a nominee for any other party, (ii) for investment and (iii) not with a view toward distribution or resale, and shall have confirmed such other matters related thereto as may be reasonably requested by the Company, and (C) such Holder shall have furnished the Company with an opinion of counsel, reasonably satisfactory to the Company, to the effect that such disposition will not require registration of such Securities under applicable securities laws.

10. **Reservation of Stock**. The Company covenants that during the term this Warrant is exercisable, the Company will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of Common Stock upon the exercise of this Warrant and, from time to time, will take all steps necessary to amend its Articles of Incorporation, as amended and/or amended and restated from time to time (the "Certificate") as the same may be amended from time to time to provide sufficient reserves of shares of Common Stock issuable upon exercise of the Warrant.

11. Amendments.

    a. Any term of this Warrant may be amended, and any waiver of any term of this Warrant may be granted, with the written consent of the Company and the holder of this Warrant. Any amendment or waiver effected in accordance with this Section 11 shall be binding upon each future holder of the Warrant and the Company, notwithstanding the fact that such future holder did not consent to such amendment or waiver.

    b. No waivers of or exceptions to any term, condition or provision of the Warrant, in any one or more instances, shall be deemed to be, or construed as, a further or continuing waiver of any such term, condition or provision.

12. **Adjustments**. The Exercise Price and the number of shares purchasable hereunder are subject to adjustment from time to time as follows:

    a. Reclassification, etc. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall, by reclassification of securities or otherwise, change any of the securities as to which purchase rights under this Warrant exist into the same or a different number of securities of any other class or classes, this Warrant shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities which were subject to the purchase rights under this Warrant immediately prior to such reclassification or other change and the Exercise Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Section 12.

    b. Split, Subdivision or Combination of Warrant Shares. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall split, subdivide or combine the securities as to which purchase rights under this Warrant exist, into a different number of securities of the same class, the Exercise Price for such securities shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

c. Merger or Reorganization. If at any time there shall be any reorganization, recapitalization, merger or consolidation (a "Reorganization") involving the Company (other than as otherwise provided for herein) in which the Company's equity securities are converted into or exchanged for securities, cash or other property, then, as a part of such Reorganization, lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon exercise of this Warrant the kind and amount of securities, cash or other property of the successor corporation resulting from such Reorganization, equivalent in value to that which a holder of the Warrant Shares deliverable upon exercise of this Warrant would have been entitled in such Reorganization if the right to purchase the Warrant Shares hereunder had been exercised immediately prior to such Reorganization. In any such case, appropriate adjustment (as determined in good faith by the Board of Directors of the successor corporation) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after such Reorganization to the end that the provisions of this Warrant shall be applicable after the event, as near as reasonably may be, in relation to any shares or other securities deliverable after that event upon the exercise of this Warrant.

d. Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment pursuant to this Section12, the Company shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Company shall, upon the written request, at any time, of the Holder, furnish or cause to be furnished to the Holder a like certificate setting forth: (i) such adjustments and readjustments; (ii) the Exercise Price at the time in effect; and (iii) the number of shares and the amount, if any, of other property which at the time would be received upon the exercise of the Warrant.

13. **Miscellaneous**.

a. Additional Undertaking. The Holder hereby agrees to take whatever additional action and execute whatever additional documents the Company may deem necessary or advisable in order to carry out or effect one or more of the obligations or restrictions imposed on either the Holder or the shares of Common Stock issued upon exercise hereof pursuant to the provisions of this Warrant.

b. Governing Law. This Warrant shall be governed by, and construed in accordance with, the laws of the State of New York without resort to its conflict-of-laws rules.

c. Jurisdiction. The Holder and the Company irrevocably consents to the exclusive jurisdiction of, and venue in, the state courts in the State of New York (or in the event of exclusive federal jurisdiction, the federal district courts in the State of New York), in connection with any action based upon, arising out of or in connection with this Warrant or the matters contemplated herein, and agrees that process may be served upon them in any manner authorized by the law of the State of New York for such persons.

d. Successors and Assigns. The provisions of this Warrant shall inure to the benefit of, and be binding upon, the Company and its successors and assigns and upon the Holder and its successors, whether or not any such person shall have become a party to this Warrant and have agreed in writing to join herein and be bound by the terms hereof.

e. Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

f. Notices. All notices and other communications required or permitted hereunder shall be in writing and shall be sent by facsimile or electronic mail or otherwise delivered by hand, messenger or courier service addressed:

i. if to the Holder, to the Holder at the Holder's address, facsimile number or electronic mail address as shown in the Company's records, as may be updated in accordance with the provisions hereof, or until the Holder so furnishes an address, facsimile number or electronic mail address to the Company, then to and at the address, facsimile number or electronic mail address of the last holder of this Warrant for which the Company has contact information in its records; or

ii. if to the Company, to the attention of the Chief Executive Officer of the Company at 99 Hayden Ave, Suite 230, Lexington, Massachusetts 02421, United States or at such other current address as the Company shall have furnished to the Holder or at s.maguire@xeneticbio.com.

Each such notice or other communication shall for all purposes of this Warrant be treated as effective or having been given (i) if delivered by hand, messenger or courier service, when delivered (or if sent via a nationally-recognized overnight courier service, freight prepaid, specifying next-business-day delivery, one business day after deposit with the courier), or (ii) if sent via facsimile, upon confirmation of facsimile transfer or, if sent via electronic mail, upon confirmation of delivery when directed to the relevant electronic mail address, if sent during normal business hours of the recipient, or if not sent during normal business hours of the recipient, then on the recipient's next business day. In the event of any conflict between the Company's books and records and this Warrant or any notice delivered hereunder, the Company's books and records will control absent fraud or error.

g. Severability. If any provision of this Warrant becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, portions of such provision, or such provision in its entirety, to the extent necessary, shall be severed from this Warrant, and such illegal, unenforceable or void provision shall be replaced with a valid and enforceable provision that will achieve, to the extent possible, the same economic, business and other purposes of the illegal, unenforceable or void provision. The balance of this Warrant shall be enforceable in accordance with its terms.

h. Rights and Obligations Survive Exercise of the Warrant. Except as otherwise provided herein, the rights and obligations of the Company and the Holder under this Warrant shall survive exercise of this Warrant.

i. Entire Agreement. Except as expressly set forth herein, this Warrant (including the exhibits attached hereto) constitutes the entire agreement and understanding of the Company and the Holder with respect to the subject matter hereof and supersede all prior agreements and understandings relating to the subject matter hereof.

[*signature page follows*]

**IN WITNESS WHEREOF**, the parties have executed this Warrant as of the date first written above.

**XENETIC BIOSCIENCES, INC.**

By: _____
Name:
Title:

**AGREED AND ACKNOWLEDGED**

**SYNBIO LLC**

By: _____
Name:
Title:

Address: Building 2, 55/1, Leninsky Prospekt
Moscow, Russian Federation

Email:
Fax:

**EXHIBIT A**

**NOTICE OF EXERCISE**

To: Xenetic Biosciences, Inc.

(1) The undersigned hereby elects to purchase shares of Common Stock (the "Shares") of Xenetic Biosciences, Inc., pursuant to the terms of the attached Warrant as follows:

(a) The undersigned herewith makes payment of the full purchase price for the Shares at the Exercise Price per share provided for in the Warrant of $_____, for an aggregate Exercise Price of $_____, by delivery to the Company of a certified or official bank check payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company, in the amount of the aggregate Exercise Price.

(2) In exercising this Warrant, the undersigned hereby confirms and acknowledges that the shares of Common Stock have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), and are restricted securities under the Securities Act and that the undersigned will not offer, sell, or otherwise dispose of any such shares of Common Stock except under circumstances that will not result in a violation of the Securities Act or any state securities laws.

(3) The undersigned represents and warrants that the shares of Common Stock being purchased are being acquired for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, the distribution thereof, and that the undersigned has no present intention of selling, granting any participation in, or otherwise distributing the shares, nor does it have any contract, undertaking, agreement or arrangement for the same, and all representations and warranties of the undersigned set forth in Section 8 of the attached Warrant are true and correct as of the date hereof.

(4) The undersigned has executed, and delivers herewith, an Investment Representation Statement and Market Stand-Off Agreement in a form substantially similar to the form attached to the Warrant as Exhibit A-1.

(5) Please issue a certificate or certificates representing said shares of Common Stock in the name of the undersigned as is specified below:

Name _____

(6) Please issue a new Warrant for the unexercised portion of the attached Warrant in the name of the undersigned as is specified below:

Name _____

_____
(*Print name of the warrant holder*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Date*)

_____
(*Fax number*)

_____
(*Email address*)

**EXHIBIT A-l**

**INVESTMENT REPRESENTATION STATEMENT**
**AND**
**MARKET STAND-OFF AGREEMENT**

INVESTOR: _____

COMPANY: XENETIC BIOSCIENCES, INC.

SECURITIES: THE WARRANT ISSUED ON DECEMBER 31, 2014 (THE "WARRANT") AND THE SECURITIES ISSUED OR ISSUABLE UPON EXERCISE THEREOF (INCLUDING UPON SUBSEQUENT CONVERSION OF THOSE SECURITIES)

DATE: _____

In connection with the purchase or acquisition of the above-listed Securities, the undersigned Investor represents and warrants to, and agrees with, the Company as follows:

1. Investment Intent. The Investor understands that the Warrant and Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Investor is acquiring the Securities hereunder in the ordinary course of its business. The Investor does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Investor is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

2. Investor Status. At the time the Investor was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

3. General Solicitation. The Investor is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

4. Investment Experience. The Investor, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Investor is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

5. Access to Information. The Investor acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Investor has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

6. Brokers and Finders. No person will have, as a result of the transactions contemplated by the Warrant, any valid right, interest or claim against or upon the Company or the Investor for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Investor.

7. Independent Investment Decision. The Investor has independently evaluated the merits of its decision to purchase Securities pursuant to the Warrant. The Investor understands that nothing in the Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Investor has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

8. Reliance on Exemptions. The Investor understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Investor's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Investor set forth herein in order to determine the availability of such exemptions and the eligibility of the Investor to acquire the Securities.

9. No Governmental Review. The Investor understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

10. Regulation M. The Investor is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Investor.

11. Residency. The residency of the Investor (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

12. Market Stand-off. The Investor agrees that the Investor shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of the Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Investor further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Investor shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Investor agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

[*signature page follows*]

The Investor is signing this Investment Representation Statement and Market Stand-Off Agreement on the date first written above.

**INVESTOR**

_____
(*Print name of the investor*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Street address*)

_____
(*City, state and ZIP)*

**THIS WARRANT HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF A REGISTRATION STATEMENT IN EFFECT WITH RESPECT TO THE SECURITIES UNDER SUCH ACT OR SATISFACTORY ASSURANCES TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED WITH RESPECT TO SUCH SALE, OFFER, PLEDGE OR HYPOTHECATION.**

**WARRANT TO PURCHASE COMMON STOCK**

**OF**

**XENETIC BIOSCIENCES, INC.**

Void after December 30**,** 2019

Date of Issuance: December 31, 2014

This certifies that, for value received, Serum Institute of India Limited, a company organized under the laws of India, or its registered assigns (the "Holder") is entitled, subject to the terms set forth below, to purchase from Xenetic Biosciences, Inc. (the "Company"), a Nevada corporation, three million and two hundred thousand (3,200,000) shares of the Common Stock of the Company, par value $0.01 per share, (the "Warrant Shares"), upon surrender hereof, at the principal office of the Company referred to below and simultaneous payment therefor in lawful money of the United States, at the Exercise Price as set forth in Section 2 below.

Subject to the terms and conditions set forth herein, this Warrant shall be exercisable with respect to the vested portion as set forth in Section 1, in whole or in part, during the term commencing at December 31, 2016 and ending at December 30, 2019**.**

The Holder further agrees that, in addition to any other applicable transfer restrictions in the applicable securities laws and agreements, without the Company's prior written consent, the Holder shall not transfer more than [***]% of the total number of securities of the Company held by it (calculated on an as converted to Common Stock basis) per rolling six months and more than [***]% of the securities of the Company held by it (calculated on an as converted to Common Stock basis) per rolling calendar year.

1. **Vesting**. The exercisability of this Warrant shall vest as follows:

   a. Following completion of Phase II(b) human clinical trials for SC and IV modes of administration of PSA-EPO, [***]% of the Warrant Shares shall vest.

   b. Following the initiation of Phase III human trials for SC and IV modes of administration of PSA-EPO, [***]% of the Warrant Shares shall vest; provided, however, that the Holder shall take all reasonable steps to advance the Phase III human trials within India, or in appropriate and approved alternative territories, including, but not limited to, Singapore, Malaysia and South Africa.

2. **Exercise Price**. The Exercise Price per share of Common Stock at which this Warrant may be exercised shall be equal to the higher of $0.77 per share or the Fair Market Value on the date of issuance, as adjusted from time to time pursuant to Section 12 below (the "Exercise Price"). For purposes of this Section 2, the "Fair Market Value" of one share of Common Stock on the date of issuance shall have one of the following meanings:

a. if the Common Stock is listed on a recognized national stock exchange, such as The Nasdaq Stock Market LLC, the Fair Market Value shall be the Closing Price of the Common Stock on such recognized national stock exchange on the most recent trading day prior to the date of issuance of this Warrant; for the purposes of this Warrant, "Closing Price" means the final price at which one share of Common Stock is traded during any trading day;

b. if the Common Stock is not listed on a recognized national stock exchange but quoted in an over-the-counter market, the Fair Market Value shall be deemed to be the volume weighted average price per share of Common Stock for the 20 trading days ending on the day prior to the date of issuance of this Warrant;

c. if section (a) or (b) above is not applicable, the Fair Market Value shall equal the highest price per share which the Company could obtain on the date of issuancefrom a willing buyer (not a current employee or director) for shares of Common Stock sold by the Company, from authorized but unissued shares, as determined in good faith by the Company's Board of Directors.

3. **Exercise of Warrant**.

a. Subject to the terms and conditions set forth herein, the purchase rights represented by this Warrant are exercisable by the Holder in whole or in part, from time to time, by the surrender of this Warrant and the Notice of Exercise attached hereto as Exhibit A duly completed and executed on behalf of the Holder, at the office of the Company (or such other office or agency of the Company as it may designate by notice in writing to the Holder at the address of the Holder appearing on the books of the Company), upon payment in cash or by check acceptable to the Company of an amount equal to the aggregate Exercise Price of the Warrant Shares being purchased.

b. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above, and the person entitled to receive the shares of Common Stock issuable upon such exercise shall be treated for all purposes as the holder of record of such shares as of the close of business on such date. As promptly as practicable on or after such date, the Company shall issue and deliver to the person or persons entitled to receive the same a certificate or certificates for the number of shares issuable upon such exercise. In the event that this Warrant is exercised in part, the Company will execute and deliver a new Warrant of like tenor exercisable for the number of shares for which this Warrant may then be exercised.

4. **No Fractional Shares or Scrip**. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. In lieu of any fractional share to which the Holder would otherwise be entitled, the Company shall make a cash payment equal to the Exercise Price multiplied by such fraction.

5. **Replacement of Warrant**. On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction, or mutilation of this Warrant and, in the case of loss, theft, or destruction, on delivery of an indemnity agreement reasonably satisfactory in form and substance to the Company or, in the case of mutilation, on surrender and cancellation of this Warrant, the Company at its expense shall execute and deliver, in lieu of this Warrant, a new warrant of like tenor and amount.

6. **Rights of Stockholders**. Until the Holder exercises this Warrant and the Company issues the Holder Warrant Shares purchasable upon the exercise hereof, as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Common Stock or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a shareholder of the Company or any right to vote for the election of directors or upon any matter submitted to shareholders at any meeting thereof, or to give or withhold consent or assert dissenter's rights with respect to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value, or change of stock to no par value, consolidation, merger, conveyance, or otherwise) or to receive notice of meetings, or to receive dividends or subscription rights or otherwise.

7. **Market Stand-off**. The Holder agrees that the Holder shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of this Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Holder further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Holder shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Holder agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

8. **Representations and Warranties of the Holder.** By acceptance of this Warrant, the Holder represents and warrants to the Company as follows:

a. Authority. The Holder represents that it has full power and authority to enter into this Warrant. This Warrant constitutes the Holder's valid and legally binding obligation, enforceable in accordance with its terms, except as may be limited by (i) applicable bankruptcy, insolvency, reorganization, or similar laws relating to or affecting the enforcement of creditors' rights and (ii) laws relating to the availability of specific performance, injunctive relief or other equitable remedies.

b. No Conflicts. The execution, delivery and performance by the Holder of this Warrant and the consummation by the Holder of the transactions contemplated hereby will not (i) result in a violation of the organizational documents of the Holder, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Holder is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to the Holder, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of the Holder to perform its obligations hereunder.

c. Investment Intent. The Holder understands that this Warrant and the Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Holder is acquiring the Securities hereunder in the ordinary course of its business. The Holder does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Holder is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

d. Investor Status. At the time the Holder was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

e. General Solicitation. The Holder is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

f. Investment Experience. The Holder, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Holder is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

g. Access to Information. The Holder acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Holder has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

h. Brokers and Finders. No person will have, as a result of the transactions contemplated by this Warrant, any valid right, interest or claim against or upon the Company or the Holder for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Holder.

i. Independent Investment Decision. The Holder has independently evaluated the merits of its decision to purchase Securities pursuant to this Warrant. The Holder understands that nothing in this Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Holder has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

j. Reliance on Exemptions. The Holder understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Holder's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Holder set forth herein in order to determine the availability of such exemptions and the eligibility of the Holder to acquire the Securities.

k. No Governmental Review. The Holder understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

l. Regulation M. The Holder is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Holder.

m. Residency. The residency of the Holder (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

9. **Transfer of Warrant**.

a. Warrant Register. The Company will maintain a register (the "Warrant Register") containing the names and addresses of the Holder. The Holder may change its address as shown on the Warrant Register by written notice to the Company requesting such change. Any notice or written communication required or permitted to be given to the Holder may be delivered or given by mail to the Holder as shown on the Warrant Register and at the address shown on the Warrant Register. Until this Warrant is transferred on the Warrant Register, the Company may treat the Holder as shown on the Warrant Register as the absolute owner of this Warrant for all purposes, notwithstanding any notice to the contrary.

b. Warrant Agent. The Company may, by written notice to the Holder, appoint an agent for the purpose of maintaining the Warrant Register referred to in Section 9(a) above, issuing the Common Stock or other securities then issuable upon the exercise of this Warrant, exchanging this Warrant, replacing this Warrant, or any or all of the foregoing. Thereafter, any such registration, issuance, exchange, or replacement, as the case may be, shall be made at the office of such agent.

c. Compliance with Securities Laws.

i. The Warrant and the Warrant Shares are characterized as "restricted securities" under the Securities Act inasmuch as they are being acquired from the Company in a transaction not involving a public offering, and that under the Securities Act and applicable regulations thereunder, such securities may be resold without registration under the Securities Act only in certain limited circumstances. In this connection, the Holder represents that it is familiar with the Securities and Exchange Commission ("SEC") Rule 144, as presently in effect, and understands the resale limitations imposed thereby and by the Securities Act. The Company is under no obligation to register any of the securities sold hereunder. No public market now exists for this Warrant or the Warrant Shares and that it is uncertain whether a public market will ever exist for this Warrant or the Warrant Shares.

ii. This Warrant and all certificates for the Warrant Shares issued upon exercise hereof shall be stamped or imprinted with legends in substantially the following form (in addition to any legend required by state securities laws):

> "THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. THE SECURITIES MAY NOT BE SOLD OR OFFERED FOR SALE IN THE ABSENCE OF (A) AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER SUCH ACT, (B) A "NO ACTION" LETTER OF THE SECURITIES AND EXCHANGE COMMISSION WITH RESPECT TO SUCH SALE OR OFFER OR (C) SATISFACTORY ASSURANCES TO THE CORPORATION THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR OFFER.
>
> THE SECURITIES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE, INCLUDING A LOCK-UP PERIOD IN THE EVENT OF A PUBLIC OFFERING, AS SET FORTH IN THE WARRANT PURSUANT TO WHICH THESE SHARES WERE ISSUED, A COPY OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE COMPANY."

d. Disposition of the Holder's Rights.

i. Transferability. This Warrant shall not be transferred or assigned in whole or in part by Holder and any attempt by Holder to transfer or assign any rights, duties or obligations that arise under this Warrant shall be void. Any transfer of the Warrant Shares issuable upon exercise of this Warrant (the "Securities") must be in compliance with all applicable securities laws. The Holder agrees not to make any sale, assignment, transfer, pledge or other disposition of all or any portion of the Securities, or any beneficial interest therein, unless and until the transferee thereof has agreed in writing for the benefit of the Company to take and hold such Securities subject to, and to be bound by, the terms and conditions set forth in this Warrant to the same extent as if the transferee were the original Holder hereunder, and (A) such Holder shall have given prior written notice to the Company of such Holder's intention to make such disposition and shall have furnished the Company with a detailed description of the manner and circumstances of the proposed disposition, (B) the transferee shall have confirmed to the satisfaction of the Company in writing, substantially in the form of Exhibit A-1, that the Securities are being acquired (i) solely for the transferee's own account and not as a nominee for any other party, (ii) for investment and (iii) not with a view toward distribution or resale, and shall have confirmed such other matters related thereto as may be reasonably requested by the Company, and (C) such Holder shall have furnished the Company with an opinion of counsel, reasonably satisfactory to the Company, to the effect that such disposition will not require registration of such Securities under applicable securities laws.

10. **Reservation of Stock**. The Company covenants that during the term this Warrant is exercisable, the Company will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of Common Stock upon the exercise of this Warrant and, from time to time, will take all steps necessary to amend its Articles of Incorporation, as amended and/or amended and restated from time to time (the "Certificate") as the same may be amended from time to time to provide sufficient reserves of shares of Common Stock issuable upon exercise of the Warrant.

11. **Amendments**.

    a. Any term of this Warrant may be amended, and any waiver of any term of this Warrant may be granted, with the written consent of the Company and the holder of this Warrant. Any amendment or waiver effected in accordance with this Section 11 shall be binding upon each future holder of the Warrant and the Company, notwithstanding the fact that such future holder did not consent to such amendment or waiver.

    b. No waivers of or exceptions to any term, condition or provision of the Warrant, in any one or more instances, shall be deemed to be, or construed as, a further or continuing waiver of any such term, condition or provision.

12. **Adjustments**. The Exercise Price and the number of shares purchasable hereunder are subject to adjustment from time to time as follows:

    a. Reclassification, etc. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall, by reclassification of securities or otherwise, change any of the securities as to which purchase rights under this Warrant exist into the same or a different number of securities of any other class or classes, this Warrant shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities which were subject to the purchase rights under this Warrant immediately prior to such reclassification or other change and the Exercise Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Section 12.

    b. Split, Subdivision or Combination of Warrant Shares. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall split, subdivide or combine the securities as to which purchase rights under this Warrant exist, into a different number of securities of the same class, the Exercise Price for such securities shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

    c. Merger or Reorganization. If at any time there shall be any reorganization, recapitalization, merger or consolidation (a "Reorganization") involving the Company (other than as otherwise provided for herein) in which the Company's equity securities are converted into or exchanged for securities, cash or other property, then, as a part of such Reorganization, lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon exercise of this Warrant the kind and amount of securities, cash or other property of the successor corporation resulting from such Reorganization, equivalent in value to that which a holder of the Warrant Shares deliverable upon exercise of this Warrant would have been entitled in such Reorganization if the right to purchase the Warrant Shares hereunder had been exercised immediately prior to such Reorganization. In any such case, appropriate adjustment (as determined in good faith by the Board of Directors of the successor corporation) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after such Reorganization to the end that the provisions of this Warrant shall be applicable after the event, as near as reasonably may be, in relation to any shares or other securities deliverable after that event upon the exercise of this Warrant.

d. Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment pursuant to this Section 12, the Company shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Company shall, upon the written request, at any time, of the Holder, furnish or cause to be furnished to the Holder a like certificate setting forth: (i) such adjustments and readjustments; (ii) the Exercise Price at the time in effect; and (iii) the number of shares and the amount, if any, of other property which at the time would be received upon the exercise of the Warrant.

13. **Miscellaneous**.

a. Additional Undertaking. The Holder hereby agrees to take whatever additional action and execute whatever additional documents the Company may deem necessary or advisable in order to carry out or effect one or more of the obligations or restrictions imposed on either the Holder or the shares of Common Stock issued upon exercise hereof pursuant to the provisions of this Warrant.

b. Governing Law. This Warrant shall be governed by, and construed in accordance with, the laws of the State of New York without resort to its conflict-of-laws rules.

c. Jurisdiction. The Holder and the Company irrevocably consents to the exclusive jurisdiction of, and venue in, the state courts in the State of New York (or in the event of exclusive federal jurisdiction, the federal district courts in the State of New York), in connection with any action based upon, arising out of or in connection with this Warrant or the matters contemplated herein, and agrees that process may be served upon them in any manner authorized by the law of the State of New York for such persons.

d. Successors and Assigns. The provisions of this Warrant shall inure to the benefit of, and be binding upon, the Company and its successors and assigns and upon the Holder and its successors, whether or not any such person shall have become a party to this Warrant and have agreed in writing to join herein and be bound by the terms hereof.

e. Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

f. Notices. All notices and other communications required or permitted hereunder shall be in writing and shall be sent by facsimile or electronic mail or otherwise delivered by hand, messenger or courier service addressed:

i. if to the Holder, to the Holder at the Holder's address, facsimile number or electronic mail address as shown in the Company's records, as may be updated in accordance with the provisions hereof, or until the Holder so furnishes an address, facsimile number or electronic mail address to the Company, then to and at the address, facsimile number or electronic mail address of the last holder of this Warrant for which the Company has contact information in its records; or

ii. if to the Company, to the attention of the Chief Executive Officer of the Company at 99 Hayden Ave, Suite 230, Lexington, Massachusetts 02421, United States or at such other current address as the Company shall have furnished to the Holder or at s.maguire@xeneticbio.com.

Each such notice or other communication shall for all purposes of this Warrant be treated as effective or having been given (i) if delivered by hand, messenger or courier service, when delivered (or if sent via a nationally-recognized overnight courier service, freight prepaid, specifying next-business-day delivery, one business day after deposit with the courier), or (ii) if sent via facsimile, upon confirmation of facsimile transfer or, if sent via electronic mail, upon confirmation of delivery when directed to the relevant electronic mail address, if sent during normal business hours of the recipient, or if not sent during normal business hours of the recipient, then on the recipient's next business day. In the event of any conflict between the Company's books and records and this Warrant or any notice delivered hereunder, the Company's books and records will control absent fraud or error.

g. Severability. If any provision of this Warrant becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, portions of such provision, or such provision in its entirety, to the extent necessary, shall be severed from this Warrant, and such illegal, unenforceable or void provision shall be replaced with a valid and enforceable provision that will achieve, to the extent possible, the same economic, business and other purposes of the illegal, unenforceable or void provision. The balance of this Warrant shall be enforceable in accordance with its terms.

h. Rights and Obligations Survive Exercise of the Warrant. Except as otherwise provided herein, the rights and obligations of the Company and the Holder under this Warrant shall survive exercise of this Warrant.

i. Entire Agreement. Except as expressly set forth herein, this Warrant (including the exhibits attached hereto) constitutes the entire agreement and understanding of the Company and the Holder with respect to the subject matter hereof and supersede all prior agreements and understandings relating to the subject matter hereof.

[*signature page follows*]

**IN WITNESS WHEREOF**, the parties have executed this Warrant as of the date first written above.

**XENETIC BIOSCIENCES, INC.**

By: _____
Name:
Title:

**AGREED AND ACKNOWLEDGED**

**SERUM INSTITUTE OF INDIA LIMITED**

By: _____
Name:
Title:

Address:

Email:
Fax:

**EXHIBIT A**

**NOTICE OF EXERCISE**

To: Xenetic Biosciences, Inc.

(1) The undersigned hereby elects to purchase _____ shares of Common Stock (the "Shares") of Xenetic Biosciences, Inc., pursuant to the terms of the attached Warrant as follows:

(a) The undersigned herewith makes payment of the full purchase price for the Shares at the Exercise Price per share provided for in the Warrant of $_____, for an aggregate Exercise Price of $_____, by delivery to the Company of a certified or official bank check payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company, in the amount of the aggregate Exercise Price.

(2) In exercising this Warrant, the undersigned hereby confirms and acknowledges that the shares of Common Stock have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), and are restricted securities under the Securities Act and that the undersigned will not offer, sell, or otherwise dispose of any such shares of Common Stock except under circumstances that will not result in a violation of the Securities Act or any state securities laws.

(3) The undersigned represents and warrants that the shares of Common Stock being purchased are being acquired for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, the distribution thereof, and that the undersigned has no present intention of selling, granting any participation in, or otherwise distributing the shares, nor does it have any contract, undertaking, agreement or arrangement for the same, and all representations and warranties of the undersigned set forth in Section 8 of the attached Warrant are true and correct as of the date hereof.

(4) The undersigned has executed, and delivers herewith, an Investment Representation Statement and Market Stand-Off Agreement in a form substantially similar to the form attached to the Warrant as Exhibit A-1.

(5) Please issue a certificate or certificates representing said shares of Common Stock in the name of the undersigned as is specified below:

Name _____

(6) Please issue a new Warrant for the unexercised portion of the attached Warrant in the name of the undersigned as is specified below:

Name _____

_____
(*Print name of the warrant holder*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Date*)

_____
(*Fax number*)

_____
(*Email address*)

**EXHIBIT A-l**

**INVESTMENT REPRESENTATION STATEMENT**
**AND**
**MARKET STAND-OFF AGREEMENT**

INVESTOR: _____

COMPANY: XENETIC BIOSCIENCES, INC.

SECURITIES: THE WARRANT ISSUED ON DECEMBER 31, 2014 (THE "WARRANT") AND THE SECURITIES ISSUED OR ISSUABLE UPON EXERCISE THEREOF (INCLUDING UPON SUBSEQUENT CONVERSION OF THOSE SECURITIES)

DATE: _____

In connection with the purchase or acquisition of the above-listed Securities, the undersigned Investor represents and warrants to, and agrees with, the Company as follows:

1. Investment Intent. The Investor understands that the Warrant and Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Investor is acquiring the Securities hereunder in the ordinary course of its business. The Investor does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Investor is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

2. Investor Status. At the time the Investor was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

3. General Solicitation. The Investor is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

4. Investment Experience. The Investor, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Investor is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

5. Access to Information. The Investor acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Investor has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

6. Brokers and Finders. No person will have, as a result of the transactions contemplated by the Warrant, any valid right, interest or claim against or upon the Company or the Investor for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Investor.

7. Independent Investment Decision. The Investor has independently evaluated the merits of its decision to purchase Securities pursuant to the Warrant. The Investor understands that nothing in the Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Investor has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

8. Reliance on Exemptions. The Investor understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Investor's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Investor set forth herein in order to determine the availability of such exemptions and the eligibility of the Investor to acquire the Securities.

9. No Governmental Review. The Investor understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

10. Regulation M. The Investor is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Investor.

11. Residency. The residency of the Investor (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

12. Market Stand-off. The Investor agrees that the Investor shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of the Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Investor further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Investor shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Investor agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

[*signature page follows*]

The Investor is signing this Investment Representation Statement and Market Stand-Off Agreement on the date first written above.

**INVESTOR**

_____
(*Print name of the investor*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Street address*)

_____
(*City, state and ZIP)*

**EXHIBIT 10.4**

**THIS WARRANT HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF A REGISTRATION STATEMENT IN EFFECT WITH RESPECT TO THE SECURITIES UNDER SUCH ACT OR SATISFACTORY ASSURANCES TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED WITH RESPECT TO SUCH SALE, OFFER, PLEDGE OR HYPOTHECATION.**

**WARRANT TO PURCHASE COMMON STOCK**

**OF**

**XENETIC BIOSCIENCES, INC.**

Void after December 30**,** 2019

Date of Issuance: December 31, 2014

This certifies that, for value received, Firdaus Jal Dastoor, or his registered assigns (the "Holder") is entitled, subject to the terms set forth below, to purchase from Xenetic Biosciences, Inc. (the "Company"), a Nevada corporation, one million and six hundred thousand (1,600,000) shares of the Common Stock of the Company, par value $0.01 per share, (the "Warrant Shares"), upon surrender hereof, at the principal office of the Company referred to below and simultaneous payment therefor in lawful money of the United States, at the Exercise Price as set forth in Section 1 below.

Subject to the terms and conditions set forth herein, this Warrant shall be exercisable, in whole or in part, during the term commencing at December 31, 2016 and ending at December 30, 2019.

1. **Exercise Price**. The Exercise Price per share of Common Stock at which this Warrant may be exercised shall be equal to the higher of $0.77 per share or the Fair Market Value on the date of issuance, as adjusted from time to time pursuant to Section 11 below (the "Exercise Price"). For purposes of this Section 1, the "Fair Market Value" of one share of Common Stock on the date of issuance shall have one of the following meanings:

    a. if the Common Stock is listed on a recognized national stock exchange, such as The Nasdaq Stock Market LLC, the Fair Market Value shall be the Closing Price of the Common Stock on such recognized national stock exchange on the most recent trading day prior to the date of issuance of this Warrant; for the purposes of this Warrant, "Closing Price" means the final price at which one share of Common Stock is traded during any trading day;

    b. if the Common Stock is not listed on a recognized national stock exchange but quoted in an over-the-counter market, the Fair Market Value shall be deemed to be the volume weighted average price per share of Common Stock for the 20 trading days ending on the day prior to the date of issuance of this Warrant;

    c. if section (a) or (b) above is not applicable, the Fair Market Value shall equal the highest price per share which the Company could obtain on the date of issuance from a willing buyer (not a current employee or director) for shares of Common Stock sold by the Company, from authorized but unissued shares, as determined in good faith by the Company's Board of Directors.

2. **Exercise of Warrant**.

   a. Subject to the terms and conditions set forth herein, the purchase rights represented by this Warrant are exercisable by the Holder in whole or in part, from time to time, by the surrender of this Warrant and the Notice of Exercise attached hereto as Exhibit A duly completed and executed on behalf of the Holder, at the office of the Company (or such other office or agency of the Company as it may designate by notice in writing to the Holder at the address of the Holder appearing on the books of the Company), upon payment in cash or by check acceptable to the Company of an amount equal to the aggregate Exercise Price of the Warrant Shares being purchased.

   b. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above, and the person entitled to receive the shares of Common Stock issuable upon such exercise shall be treated for all purposes as the holder of record of such shares as of the close of business on such date. As promptly as practicable on or after such date, the Company shall issue and deliver to the person or persons entitled to receive the same a certificate or certificates for the number of shares issuable upon such exercise. In the event that this Warrant is exercised in part, the Company will execute and deliver a new Warrant of like tenor exercisable for the number of shares for which this Warrant may then be exercised.

3. **No Fractional Shares or Scrip**. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. In lieu of any fractional share to which the Holder would otherwise be entitled, the Company shall make a cash payment equal to the Exercise Price multiplied by such fraction.

4. **Replacement of Warrant**. On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction, or mutilation of this Warrant and, in the case of loss, theft, or destruction, on delivery of an indemnity agreement reasonably satisfactory in form and substance to the Company or, in the case of mutilation, on surrender and cancellation of this Warrant, the Company at its expense shall execute and deliver, in lieu of this Warrant, a new warrant of like tenor and amount.

5. **Rights of Stockholders**. Until the Holder exercises this Warrant and the Company issues the Holder Warrant Shares purchasable upon the exercise hereof, as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Common Stock or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a shareholder of the Company or any right to vote for the election of directors or upon any matter submitted to shareholders at any meeting thereof, or to give or withhold consent or assert dissenter's rights with respect to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value, or change of stock to no par value, consolidation, merger, conveyance, or otherwise) or to receive notice of meetings, or to receive dividends or subscription rights or otherwise.

6. **Market Stand-off**. The Holder agrees that the Holder shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of this Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Holder further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Holder shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Holder agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

7. **Representations and Warranties of the Holder.** By acceptance of this Warrant, the Holder represents and warrants to the Company as follows:

a. Authority. The Holder represents that it has full power and authority to enter into this Warrant. This Warrant constitutes the Holder's valid and legally binding obligation, enforceable in accordance with its terms, except as may be limited by (i) applicable bankruptcy, insolvency, reorganization, or similar laws relating to or affecting the enforcement of creditors' rights and (ii) laws relating to the availability of specific performance, injunctive relief or other equitable remedies.

b. No Conflicts. The execution, delivery and performance by the Holder of this Warrant and the consummation by the Holder of the transactions contemplated hereby will not (i) result in a violation of the organizational documents of the Holder, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Holder is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to the Holder, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of the Holder to perform its obligations hereunder.

c. Investment Intent. The Holder understands that this Warrant and the Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Holder is acquiring the Securities hereunder in the ordinary course of its business. The Holder does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Holder is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

d. Investor Status. At the time the Holder was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

e. General Solicitation. The Holder is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

f. Investment Experience. The Holder, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Holder is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

g. Access to Information. The Holder acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Holder has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

h. Brokers and Finders. No person will have, as a result of the transactions contemplated by this Warrant, any valid right, interest or claim against or upon the Company or the Holder for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Holder.

i. Independent Investment Decision. The Holder has independently evaluated the merits of its decision to purchase Securities pursuant to this Warrant. The Holder understands that nothing in this Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Holder has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

j. Reliance on Exemptions. The Holder understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Holder's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Holder set forth herein in order to determine the availability of such exemptions and the eligibility of the Holder to acquire the Securities.

k. No Governmental Review. The Holder understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

l. Regulation M. The Holder is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Holder.

m. Residency. The residency of the Holder (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

8. **Transfer of Warrant**.

a. Warrant Register. The Company will maintain a register (the "Warrant Register") containing the names and addresses of the Holder. The Holder may change its address as shown on the Warrant Register by written notice to the Company requesting such change. Any notice or written communication required or permitted to be given to the Holder may be delivered or given by mail to the Holder as shown on the Warrant Register and at the address shown on the Warrant Register. Until this Warrant is transferred on the Warrant Register, the Company may treat the Holder as shown on the Warrant Register as the absolute owner of this Warrant for all purposes, notwithstanding any notice to the contrary.

b. Warrant Agent. The Company may, by written notice to the Holder, appoint an agent for the purpose of maintaining the Warrant Register referred to in Section 8(a) above, issuing the Common Stock or other securities then issuable upon the exercise of this Warrant, exchanging this Warrant, replacing this Warrant, or any or all of the foregoing. Thereafter, any such registration, issuance, exchange, or replacement, as the case may be, shall be made at the office of such agent.

c. Compliance with Securities Laws.

i. The Warrant and the Warrant Shares are characterized as "restricted securities" under the Securities Act inasmuch as they are being acquired from the Company in a transaction not involving a public offering, and that under the Securities Act and applicable regulations thereunder, such securities may be resold without registration under the Securities Act only in certain limited circumstances. In this connection, the Holder represents that it is familiar with the Securities and Exchange Commission ("SEC") Rule 144, as presently in effect, and understands the resale limitations imposed thereby and by the Securities Act. The Company is under no obligation to register any of the securities sold hereunder. No public market now exists for this Warrant or the Warrant Shares and that it is uncertain whether a public market will ever exist for this Warrant or the Warrant Shares.

ii. This Warrant and all certificates for the Warrant Shares issued upon exercise hereof shall be stamped or imprinted with legends in substantially the following form (in addition to any legend required by state securities laws):

> "THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. THE SECURITIES MAY NOT BE SOLD OR OFFERED FOR SALE IN THE ABSENCE OF (A) AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER SUCH ACT, (B) A "NO ACTION" LETTER OF THE SECURITIES AND EXCHANGE COMMISSION WITH RESPECT TO SUCH SALE OR OFFER OR (C) SATISFACTORY ASSURANCES TO THE CORPORATION THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR OFFER.
>
> THE SECURITIES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE, INCLUDING A LOCK-UP PERIOD IN THE EVENT OF A PUBLIC OFFERING, AS SET FORTH IN THE WARRANT PURSUANT TO WHICH THESE SHARES WERE ISSUED, A COPY OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE COMPANY."

d. Disposition of the Holder's Rights.

i. Transferability. This Warrant shall not be transferred or assigned in whole or in part by Holder and any attempt by Holder to transfer or assign any rights, duties or obligations that arise under this Warrant shall be void. Any transfer of the Warrant Shares issuable upon exercise of this Warrant (the "Securities") must be in compliance with all applicable securities laws. The Holder agrees not to make any sale, assignment, transfer, pledge or other disposition of all or any portion of the Securities, or any beneficial interest therein, unless and until the transferee thereof has agreed in writing for the benefit of the Company to take and hold such Securities subject to, and to be bound by, the terms and conditions set forth in this Warrant to the same extent as if the transferee were the original Holder hereunder, and (A) such Holder shall have given prior written notice to the Company of such Holder's intention to make such disposition and shall have furnished the Company with a detailed description of the manner and circumstances of the proposed disposition, (B) the transferee shall have confirmed to the satisfaction of the Company in writing, substantially in the form of Exhibit A-1, that the Securities are being acquired (i) solely for the transferee's own account and not as a nominee for any other party, (ii) for investment and (iii) not with a view toward distribution or resale, and shall have confirmed such other matters related thereto as may be reasonably requested by the Company, and (C) such Holder shall have furnished the Company with an opinion of counsel, reasonably satisfactory to the Company, to the effect that such disposition will not require registration of such Securities under applicable securities laws.

9. **Reservation of Stock**. The Company covenants that during the term this Warrant is exercisable, the Company will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of Common Stock upon the exercise of this Warrant and, from time to time, will take all steps necessary to amend its Articles of Incorporation, as amended and/or amended and restated from time to time (the "Certificate") as the same may be amended from time to time to provide sufficient reserves of shares of Common Stock issuable upon exercise of the Warrant.

10. **Amendments**.

a. Any term of this Warrant may be amended, and any waiver of any term of this Warrant may be granted, with the written consent of the Company and the holder of this Warrant. Any amendment or waiver effected in accordance with this Section 10 shall be binding upon each future holder of the Warrant and the Company, notwithstanding the fact that such future holder did not consent to such amendment or waiver.

b. No waivers of or exceptions to any term, condition or provision of the Warrant, in any one or more instances, shall be deemed to be, or construed as, a further or continuing waiver of any such term, condition or provision.

11. **Adjustments**. The Exercise Price and the number of shares purchasable hereunder are subject to adjustment from time to time as follows:

    a. Reclassification, etc. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall, by reclassification of securities or otherwise, change any of the securities as to which purchase rights under this Warrant exist into the same or a different number of securities of any other class or classes, this Warrant shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities which were subject to the purchase rights under this Warrant immediately prior to such reclassification or other change and the Exercise Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Section 11.

    b. Split, Subdivision or Combination of Warrant Shares. If the Company at any time while this Warrant, or any portion thereof, remains outstanding and unexpired shall split, subdivide or combine the securities as to which purchase rights under this Warrant exist, into a different number of securities of the same class, the Exercise Price for such securities shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

    c. Merger or Reorganization. If at any time there shall be any reorganization, recapitalization, merger or consolidation (a "Reorganization") involving the Company (other than as otherwise provided for herein) in which the Company's equity securities are converted into or exchanged for securities, cash or other property, then, as a part of such Reorganization, lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon exercise of this Warrant the kind and amount of securities, cash or other property of the successor corporation resulting from such Reorganization, equivalent in value to that which a holder of the Warrant Shares deliverable upon exercise of this Warrant would have been entitled in such Reorganization if the right to purchase the Warrant Shares hereunder had been exercised immediately prior to such Reorganization. In any such case, appropriate adjustment (as determined in good faith by the Board of Directors of the successor corporation) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after such Reorganization to the end that the provisions of this Warrant shall be applicable after the event, as near as reasonably may be, in relation to any shares or other securities deliverable after that event upon the exercise of this Warrant.

    d. Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment pursuant to this Section 11, the Company shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Company shall, upon the written request, at any time, of the Holder, furnish or cause to be furnished to the Holder a like certificate setting forth: (i) such adjustments and readjustments; (ii) the Exercise Price at the time in effect; and (iii) the number of shares and the amount, if any, of other property which at the time would be received upon the exercise of the Warrant.

12. **Miscellaneous**.

a. Additional Undertaking. The Holder hereby agrees to take whatever additional action and execute whatever additional documents the Company may deem necessary or advisable in order to carry out or effect one or more of the obligations or restrictions imposed on either the Holder or the shares of Common Stock issued upon exercise hereof pursuant to the provisions of this Warrant.

b. Governing Law. This Warrant shall be governed by, and construed in accordance with, the laws of the State of New York without resort to its conflict-of-laws rules.

c. Jurisdiction. The Holder and the Company irrevocably consents to the exclusive jurisdiction of, and venue in, the state courts in the State of New York (or in the event of exclusive federal jurisdiction, the federal district courts in the State of New York), in connection with any action based upon, arising out of or in connection with this Warrant or the matters contemplated herein, and agrees that process may be served upon them in any manner authorized by the law of the State of New York for such persons.

d. Successors and Assigns. The provisions of this Warrant shall inure to the benefit of, and be binding upon, the Company and its successors and assigns and upon the Holder and its successors, whether or not any such person shall have become a party to this Warrant and have agreed in writing to join herein and be bound by the terms hereof.

e. Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

f. Notices. All notices and other communications required or permitted hereunder shall be in writing and shall be sent by facsimile or electronic mail or otherwise delivered by hand, messenger or courier service addressed:

i. if to the Holder, to the Holder at the Holder's address, facsimile number or electronic mail address as shown in the Company's records, as may be updated in accordance with the provisions hereof, or until the Holder so furnishes an address, facsimile number or electronic mail address to the Company, then to and at the address, facsimile number or electronic mail address of the last holder of this Warrant for which the Company has contact information in its records; or

ii. if to the Company, to the attention of the Chief Executive Officer of the Company at 99 Hayden Ave, Suite 230, Lexington, Massachusetts 02421, United States or at such other current address as the Company shall have furnished to the Holder or at s.maguire@xeneticbio.com.

Each such notice or other communication shall for all purposes of this Warrant be treated as effective or having been given (i) if delivered by hand, messenger or courier service, when delivered (or if sent via a nationally-recognized overnight courier service, freight prepaid, specifying next-business-day delivery, one business day after deposit with the courier), or (ii) if sent via facsimile, upon confirmation of facsimile transfer or, if sent via electronic mail, upon confirmation of delivery when directed to the relevant electronic mail address, if sent during normal business hours of the recipient, or if not sent during normal business hours of the recipient, then on the recipient's next business day. In the event of any conflict between the Company's books and records and this Warrant or any notice delivered hereunder, the Company's books and records will control absent fraud or error.

g. Severability. If any provision of this Warrant becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, portions of such provision, or such provision in its entirety, to the extent necessary, shall be severed from this Warrant, and such illegal, unenforceable or void provision shall be replaced with a valid and enforceable provision that will achieve, to the extent possible, the same economic, business and other purposes of the illegal, unenforceable or void provision. The balance of this Warrant shall be enforceable in accordance with its terms.

h. Rights and Obligations Survive Exercise of the Warrant. Except as otherwise provided herein, the rights and obligations of the Company and the Holder under this Warrant shall survive exercise of this Warrant.

i. Entire Agreement. Except as expressly set forth herein, this Warrant (including the exhibits attached hereto) constitutes the entire agreement and understanding of the Company and the Holder with respect to the subject matter hereof and supersede all prior agreements and understandings relating to the subject matter hereof.

[*signature page follows*]

**IN WITNESS WHEREOF**, the parties have executed this Warrant as of the date first written above.

**XENETIC BIOSCIENCES, INC.**

By: _____
Name:
Title:

**AGREED AND ACKNOWLEDGED**

_____
Firdaus Jal Dastoor

Address:

Email:
Fax:

**EXHIBIT A**

**NOTICE OF EXERCISE**

To: Xenetic Biosciences, Inc.

(1) The undersigned hereby elects to purchase _____ shares of Common Stock (the "Shares") of Xenetic Biosciences, Inc., pursuant to the terms of the attached Warrant as follows:

(a) The undersigned herewith makes payment of the full purchase price for the Shares at the Exercise Price per share provided for in the Warrant of $ _____, for an aggregate Exercise Price of $ _____, by delivery to the Company of a certified or official bank check payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company, in the amount of the aggregate Exercise Price.

(2) In exercising this Warrant, the undersigned hereby confirms and acknowledges that the shares of Common Stock have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), and are restricted securities under the Securities Act and that the undersigned will not offer, sell, or otherwise dispose of any such shares of Common Stock except under circumstances that will not result in a violation of the Securities Act or any state securities laws.

(3) The undersigned represents and warrants that the shares of Common Stock being purchased are being acquired for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, the distribution thereof, and that the undersigned has no present intention of selling, granting any participation in, or otherwise distributing the shares, nor does it have any contract, undertaking, agreement or arrangement for the same, and all representations and warranties of the undersigned set forth in Section 7 of the attached Warrant are true and correct as of the date hereof.

(4) The undersigned has executed, and delivers herewith, an Investment Representation Statement and Market Stand-Off Agreement in a form substantially similar to the form attached to the Warrant as Exhibit A-1.

(5) Please issue a certificate or certificates representing said shares of Common Stock in the name of the undersigned as is specified below:

Name _____

(6) Please issue a new Warrant for the unexercised portion of the attached Warrant in the name of the undersigned as is specified below:

Name _____

_____
(*Print name of the warrant holder*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Date*)

_____
(*Fax number*)

_____
(*Email address*)

**EXHIBIT A-l**

**INVESTMENT REPRESENTATION STATEMENT**
**AND**
**MARKET STAND-OFF AGREEMENT**

INVESTOR: _____

COMPANY: XENETIC BIOSCIENCES, INC.

SECURITIES: THE WARRANT ISSUED ON DECEMBER 31, 2014 (THE "WARRANT") AND THE SECURITIES ISSUED OR ISSUABLE UPON EXERCISE THEREOF (INCLUDING UPON SUBSEQUENT CONVERSION OF THOSE SECURITIES)

DATE: _____

In connection with the purchase or acquisition of the above-listed Securities, the undersigned Investor represents and warrants to, and agrees with, the Company as follows:

1. Investment Intent. The Investor understands that the Warrant and Warrant Shares (the "Securities") are "restricted securities" and have not been and will not be registered under the Securities Act of 1933, as amended (the "Securities Act") or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to, or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities laws. The Investor is acquiring the Securities hereunder in the ordinary course of its business. The Investor does not presently have any agreement, plan or understanding, directly or indirectly, with any person to distribute or effect any distribution of any of the Securities (or any securities which are derivatives thereof) to or through any person or entity; the Investor is not a registered broker-dealer under Section 15 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or an entity engaged in a business that would require it to be so registered as a broker-dealer.

2. Investor Status. At the time the Investor was offered the Securities, it was, and at the date hereof it is, either (i) an "accredited investor" as defined in Rule 501(a) under the Securities Act or (ii) not a "U.S. person" as defined in Rule 902 of Regulation S of the Securities Act.

3. General Solicitation. The Investor is not acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general advertisement.

4. Investment Experience. The Investor, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Investor is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

5. Access to Information. The Investor acknowledges that it has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its subsidiaries and their respective financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Investor has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Securities.

6. Brokers and Finders. No person will have, as a result of the transactions contemplated by the Warrant, any valid right, interest or claim against or upon the Company or the Investor for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Investor.

7. Independent Investment Decision. The Investor has independently evaluated the merits of its decision to purchase Securities pursuant to the Warrant. The Investor understands that nothing in the Warrant or any other materials presented by or on behalf of the Company to it in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Investor has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

8. Reliance on Exemptions. The Investor understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Investor's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Investor set forth herein in order to determine the availability of such exemptions and the eligibility of the Investor to acquire the Securities.

9. No Governmental Review. The Investor understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

10. Regulation M. The Investor is aware that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of the Securities and other activities with respect to the Securities by the Investor.

11. Residency. The residency of the Investor (or, in the case of a partnership or corporation, such entity's principal place of business) is correctly set forth on the signature page hereto.

12. Market Stand-off. The Investor agrees that the Investor shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any shares of the Company's capital stock acquired through the exercise of the Warrant during the 180 day period following the commencement of the Company's public offerings (or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions). The Investor further agrees that to the extent that the executive officers and directors of the Company are subject to a longer market stand-off period, the Investor shall be subject to such longer market stand-off period as well. The Company may impose stop transfer instructions and may stamp each certificate with a legend with respect to the shares subject to the foregoing restriction until the end of such 180 day (or other) period. The Investor agrees to execute a market stand-off agreement with the underwriters in the offerings in customary form consistent with the provisions of this section.

[*signature page follows*]

The Investor is signing this Investment Representation Statement and Market Stand-Off Agreement on the date first written above.

**INVESTOR**

_____
(*Print name of the investor*)

_____
(*Signature*)

_____
(*Name and title of signatory, if applicable*)

_____
(*Street address*)

_____
(*City, state and ZIP)*

**EXHIBIT 31.1**

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER**
**PURSUANT TO EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),**
**AS ADOPTED PURSUANT TO**
**SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Michael Scott Maguire, certify that:

1. I have reviewed this Annual Report on Form 10-K of Xenetic Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: April 15, 2015

By: /s/ Michael Scott Maguire
Michael Scott Maguire
Chief Executive Officer, President and Director

**EXHIBIT 31.2**

**CERTIFICATION OF CHIEF FINANCIAL OFFICER**
**PURSUANT TO EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),**
**AS ADOPTED PURSUANT TO**
**SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Colin William Hill, certify that:

1. I have reviewed this Annual Report on Form 10-K of Xenetic Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: April 15, 2015

By: /s/ Colin William Hill
Colin William Hill
Chief Financial Officer

**EXHIBIT 32.1**

**CERTIFICATION PURSUANT TO**
**18 U.S.C. SECTION 1350,**
**AS ADOPTED PURSUANT TO**
**SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Xenetic Biosciences, Inc. (the "Company") on Form 10K for the fiscal year ended December 31, 2014, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we, the undersigned officers of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of our knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: April 15, 2015

By: /s/ Michael Scott Maguire
Michael Scott Maguire
Chief Executive Officer, President and Director

By: /s/ Colin William Hill
Colin William Hill
Chief Financial Officer