

Celsion CORP  
Form 10-K  
March 13, 2014

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**UNITED STATES**

**SECURITIES AND EXCHANGE COMMISSION**

**WASHINGTON, D.C. 20549**

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**FORM 10-K**

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**(Mark One)**

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

**For the fiscal year ended December 31, 2013**

**OR**

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

**For the transition period from \_\_\_\_\_ to \_\_\_\_\_**

**Commission file number 001-15911**

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**CELSION CORPORATION**

**(Exact Name of Registrant as Specified in Its Charter)**

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**DELAWARE**  
**(State or Other Jurisdiction of Incorporation or Organization)**

**52-1256615**  
**(I.R.S. Employer Identification No.)**

**997 LENOX DRIVE, SUITE 100**

**08648**

**LAWRENCEVILLE, NJ**

**(Address of Principal Executive Offices)**

**(Zip Code)**

**(609) 896-9100**

**Registrant's Telephone Number, Including Area Code**

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

**Title of Each Class**

**COMMON STOCK, PAR VALUE \$.01 PER SHARE**

**Name of Each Exchange on Which Registered**

**NASDAQ CAPITAL MARKET**

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

**None**

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Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

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

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 No

Indicate by check mark whether the Registrant has submitted electronically and posted on its corporate website, 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 No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K 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.

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 definition 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

(Do not check if a smaller reporting company)

Smaller Reporting Company

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Securities Exchange Act of 1934). Yes No

As of June 28, 2013, the aggregate market value of the common stock held by non-affiliates of the Registrant was approximately \$61,365,512, based on the closing sale price for the Registrant's common stock on that date as reported

by The NASDAQ Capital Market. For purposes of this calculation, shares of common stock held by directors and officers of the Registrant at June 28, 2013 were excluded.

As of March 12, 2014, 17,215,475 shares of the Registrant's common stock were issued and outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Registrant's definitive Proxy Statement to be filed for its 2014 Annual Meeting of Stockholders are incorporated by reference into Part III hereof. Such Proxy Statement will be filed with the Securities and Exchange Commission within 120 days of the end of the fiscal year covered by this Annual Report on Form 10-K.

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**CELSION CORPORATION**

**FORM 10-K**

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## PART I

### ITEM 1. BUSINESS

#### FORWARD-LOOKING STATEMENTS

*Certain of the statements contained in this Annual Report on Form 10-K are forward-looking and constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. In addition, from time to time we may publish forward-looking statements relating to such matters as anticipated financial performance, business prospects, technological developments, product pipelines, clinical trials and research and development activities, the adequacy of capital reserves and anticipated operating results and cash expenditures, current and potential collaborations, strategic alternatives and other aspects of our present and future business operations and similar matters that also constitute such forward-looking statements. These statements involve known and unknown risks, uncertainties, and other factors that may cause our or our industry's actual results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance, or achievements expressed or implied by such forward-looking statements. Such factors include, among other things, unforeseen changes in the course of research and development activities and in clinical trials; possible changes in cost, timing and progress of development, preclinical studies, clinical trials and regulatory submissions; our or our collaborator's ability to obtain and maintain regulatory approval of any of our product candidates; possible changes in capital structure, financial condition, future working capital needs and other financial items; changes in approaches to medical treatment; introduction of new products by others; success or failure of our current or future collaboration arrangements, risks and uncertainties associated with possible acquisitions of other technologies, assets or businesses; our ability to obtain additional funds for our operations; our ability to obtain and maintain intellectual property protection for our technologies and product candidates and our ability to operate our business without infringing the intellectual property rights of others; our reliance on third parties to conduct preclinical studies or clinical trials; the rate and degree of market acceptance of any approved product candidates; possible actions by customers, suppliers, strategic partners, potential strategic partners, competitors and regulatory authorities; compliance with listing standards of The NASDAQ Capital Market; and those listed under "Risk Factors" below and elsewhere in this Annual Report on Form 10-K. In some cases, you can identify forward-looking statements by terminology such as "expect," "anticipate," "estimate," "plan," "believe," "could," "intend," "predict," "may," "should," "will," "would" and words of similar import regarding the Company's expectations. Forward-looking statements are only predictions. Actual events or results may differ materially. Although we believe that our expectations are based on reasonable assumptions within the bounds of our knowledge of our industry, business and operations, we cannot guarantee that actual results will not differ materially from our expectations. In evaluating such forward-looking statements, you should specifically consider various factors, including the risks outlined under "Risk Factors." The discussion of risks and uncertainties set forth in this Annual Report on Form 10-K is not necessarily a complete or exhaustive list of all risks facing the Company at any particular point in time. We operate in a highly competitive, highly regulated and rapidly changing environment and our business is in a state of evolution. Therefore, it is likely that new risks will emerge, and that the nature and elements of existing risks will change, over time. It is not possible for management to predict all such risk factors or changes therein, or to assess either the impact of all such risk factors on our business or the extent to which any individual risk factor, combination of factors, or new or altered factors, may cause results to differ materially from those contained in any*

*forward-looking statement. Except as required by law, we assume no obligation to revise or update any forward-looking statement that may be made from time to time by us or on our behalf for any reason, even if new information becomes available in the future.*

*Unless the context requires otherwise or unless otherwise noted, all references in this Annual Report on Form 10-K to “Celsion” “the Company”, “we”, “us”, or “our” are to Celsion Corporation, a Delaware corporation.*

## **Trademarks**

The Celsion Corporation (“Celsion” or “the Company”) brand and product names, including but not limited to Celsion® or ThermoDox®, contained in this document are trademarks, registered trademarks or service marks of Celsion Corporation in the United States (U.S.) and certain other countries. This document also contains references to trademarks and service marks of other companies that are the property of their respective owners.

## OVERVIEW

Celsion is an oncology drug development company focused on the development of treatments for those suffering with difficult-to-treat forms of cancer. We are working to develop and commercialize more efficient, effective and targeted chemotherapeutic oncology drugs based on our proprietary heat-activated liposomal technology. The promise of this drug technology is to maximize efficacy while minimizing side-effects common to cancer treatments.

Our lead product ThermoDox® is being evaluated in a Phase III clinical trial for primary liver cancer (the OPTIMA study) starting in the first half of 2014 and is being evaluated in a Phase II clinical trial for recurrent chest wall breast cancer (the DIGNITY Study). ThermoDox® is a liposomal encapsulation of doxorubicin, an approved and frequently used oncology drug for the treatment of a wide range of cancers. Localized heat at mild hyperthermia temperatures (greater than 39.5 degrees Celsius) releases the encapsulated doxorubicin from the liposome enabling high concentrations of doxorubicin to be deposited preferentially in and around the targeted tumor.

On January 31, 2013, we announced that ThermoDox® in combination with radio frequency ablation (RFA) did not meet the primary endpoint of Progression Free Survival (PFS) for the 701 patient clinical trial (the HEAT Study) in patients with hepatocellular carcinoma (HCC), also known as primary liver cancer. Specifically, we determined, after conferring with the HEAT Study independent Data Monitoring Committee (DMC), that the HEAT study did not meet the goal of demonstrating persuasive evidence of clinical effectiveness that could form the basis for regulatory approval. In the trial, ThermoDox® was well-tolerated with no unexpected serious adverse events. Following the announcement of the HEAT study results, we continue to follow patients for overall survival, the secondary endpoint of the HEAT study, on a quarterly basis. We have conducted a comprehensive analysis of the data from the HEAT study to assess the future strategic value of ThermoDox®. As part of this analysis, we are also re-evaluating our product pipeline and research and development priorities. In April 2013, we announced the deferral of expenses associated with the Company's Phase II study of ThermoDox® in combination with RFA for the treatment of colorectal liver metastases (The ABLATE Study) until such time as the Company finalizes its plans for the continuation of its development program with ThermoDox® in HCC.

The data from the HEAT Study post-hoc analysis suggests that ThermoDox® may substantially improve overall survival, when compared to the control group, in patients if their tumors undergo optimal RFA treatment. Data from four overall survival sweeps have been conducted since the top line PFS data from the HEAT Study was announced in January 2013, with each showing progressive improvement in statistical significance. In January 2014, we announced that the latest overall survival data from the post-hoc analysis of results from the HEAT Study supports continued clinical development through a prospective pivotal Phase III Study. As reported in January 2014, post-hoc data from the HEAT Study demonstrate that the patient subgroup in the ThermoDox® arm whose RFA procedure lasted longer than 45 minutes (285 patients or 63% of single lesion patients), experienced a 55% improvement in overall survival, with a Hazard Ratio of 0.64 (95% CI 0.41 - 1.00) and a P-value = 0.0495. Median overall survival for this subgroup has not yet been reached. We may choose to end this analysis of overall survival once the median is reached for either or both arms of the study.

Emerging data from the HEAT Study post-hoc analysis has been presented at three scientific and medical conferences in 2013 by key HEAT Study investigators and leading liver cancer experts. The presentations include:

World Conference on Interventional Oncology in May 2013

European Conference on Interventional Oncology in June 2013

International Liver Cancer Association Annual Conference in September 2013

The Company also completed computational modeling with supplementary preclinical animal studies supporting the relationship between heating duration and clinical outcomes.

On February 24, 2014, we announced that the FDA, after its customary 30 day review period, has provided and allowed, subject to compliance with regulatory standards, clearance for the Company's planned pivotal, double-blind, placebo-controlled Phase III trial (the OPTIMA Study) of ThermoDox®, its proprietary heat-activated liposomal encapsulation of doxorubicin in combination with RFA in primary liver cancer, also known as hepatocellular carcinoma (HCC). The OPTIMA Study trial design is based on the comprehensive analysis of data from the HEAT study, which, as described above, demonstrated that treatment with ThermoDox resulted in a 55 percent improvement in overall survival in a substantial number of HCC patients that received an optimized RFA treatment. The Company expects to launch the study in the first half of 2014. The OPTIMA Study is designed with extensive input from globally recognized HCC researchers and clinicians and after formal written consultation with FDA. The OPTIMA Study is expected to enroll approximately 550 patients globally, with up to 100 sites in the United States, Europe, China and Asia Pacific, and will evaluate ThermoDox® in combination with RFA, which will be standardized to a minimum of 45 minutes across all investigators and sites for treating lesions 3 to 7 centimeters, versus standardized RFA alone. The primary endpoint for the trial is overall survival, and the secondary endpoint for the trial is PFS and Safety. The statistical plan calls for two interim efficacy analyses by an independent Data Monitoring Committee.

In addition, the Company recently met with the China State Food and Drug Administration (CHINA FDA) to discuss the OPTIMA Phase III trial including minimum patient enrollment requirements supporting ThermoDox's registration in China. Based on those discussions, we are submitting an application for accelerated approval of the study in China. The Company plans to expand its clinical site footprint in Europe and will meet with the European Medicines Agency (EMA) in the first half of 2014.

In April 2013, we engaged Cantor Fitzgerald & Co. to conduct a comprehensive review of merger and acquisition opportunities with the goal of identifying novel products with high potential, or companies, to acquire. Strategic alternatives the Company may pursue could include, but are not limited to, continuing its current operating plan, partnering or other collaboration agreements, acquisition of another company's business or assets, or a merger or other strategic transaction. There can be no assurance that the exploration of strategic alternatives will result in any agreements or transactions, or that, if completed, any agreements or transactions will be successful or on attractive terms. To the extent we are unable to maintain a broad range of product candidates, our dependence on the success of one or a few product candidates would increase and results such as those announced in relation to the HEAT study on January 31, 2013 will have a more significant impact on our financial prospects, financial condition and market value. As demonstrated by the HEAT Study results in January 2013, drug research and development is an inherently uncertain process and there is a high risk of failure at every stage prior to approval. The timing and the outcome of clinical results is extremely difficult to predict. Clinical development successes and failures can have a disproportionate positive or negative impact on our scientific and medical prospects, financial prospects, results of operations, financial condition and market value.

In 2007, the Company sold its medical device franchise to Boston Scientific Corporation for net aggregate payments of \$43 million, receiving \$13 million in 2007 and \$15 million in each of 2008 and 2009. Since this divestiture, we have dedicated our efforts and resources to the development and commercialization of cancer drugs including tumor-targeting treatments using focused heat energy in combination with heat-activated drug delivery systems. To support our research and development, we have raised gross proceeds of approximately \$95 million in equity financings and warrant and option exercises in the years 2009 through 2013. In January 2014, the Company raised net proceeds of \$14 million through an equity financing and, including its cash, investments and interest receivable totaling \$43.1 million at the end 2013, has \$57 million to fund its operations in 2014 and beyond. During 2012 and 2013, the Company secured two credit facilities totaling \$20 million collectively, one of which has been fully repaid, and currently has up to \$15 million remaining under the surviving facility.

On December 5, 2008, we entered into a development, product supply and commercialization agreement with Yakult Honsha Co., Ltd. (the Yakult Agreement) under which we granted Yakult an exclusive right to commercialize and market ThermoDox® for the Japanese market. We received a \$2.5 million upfront licensing fee and may receive additional payments from Yakult upon receipt of marketing approval by the Japanese Ministry of Health, Labor and Welfare as well as upon the achievement of certain levels of sales and approval for new indications. Under the Yakult Agreement, we will receive double-digit escalating royalties on the sale of ThermoDox® in Japan, when and if any such sales occur and we also will be the exclusive supplier of ThermoDox® to Yakult. In January 2011, we amended the Yakult Agreement to provide for up to \$4.0 million in an accelerated partial payment to us of a future drug approval milestone which included \$2.0 million paid to us upon the closing of the preferred equity financing and an additional \$2.0 million conditioned upon the resumption of enrollment of Japanese patients in the Japan cohort of the

HEAT study. In consideration of these accelerated milestone payments from Yakult, we agreed to reduce future drug approval milestone payments by approximately forty percent (40%). All other milestone payments are unaffected.

On May 6, 2012, we entered into a long-term commercial supply agreement with Zhejiang Hisun Pharmaceutical Co. Ltd. (Hisun) for the production of ThermoDox® in mainland China, Hong Kong and Macau (the China territory). Hisun will be responsible for providing all of the technical and regulatory support services for the manufacture of ThermoDox® in the China territory and we will repay Hisun the related development costs and fees, which we expect to be approximately \$2.0 million in total, commencing on the successful completion of three registrational batches of ThermoDox®. On January 18, 2013, we broadened our relationship with Hisun by entering into a technology development contract, pursuant to which Hisun paid us a non-refundable research and development fee of \$5.0 million to support our development of ThermoDox® and we will provide research data and other technical support in relation to a regulatory filing by Hisun in China for approval of ThermoDox®. Following our announcement of the HEAT study results on January 31, 2013, we and Hisun have agreed that the technology development contract entered into on January 18, 2013 will remain in effect while the parties continue to collaborate the next steps in relation to ThermoDox®, which include the continued subgroup analysis of the Chinese cohort of patients in the HEAT Study for primary liver cancer and other activities to further the development of ThermoDox® for the China territory.

On July 19, 2013, the Company and Hisun entered into a Memorandum of Understanding to pursue ongoing collaborations for the continued clinical development of ThermoDox® as well as the technology transfer relating to the commercial manufacture of ThermoDox® for the China territory. This expanded collaboration includes development of the next generation liposomal formulation with the goal of creating safer, more efficacious versions of marketed cancer chemotherapeutics.

As a result of the risks and uncertainties discussed in this Annual Report on Form 10-K, among others, we are unable to estimate the duration and completion costs of our research and development projects or when, if ever, and to what extent we will receive cash inflows from the commercialization and sale of a product. Our inability to complete any of our research and development activities, preclinical studies or clinical trials in a timely manner or our failure to enter into collaborative agreements when appropriate could significantly increase our capital requirements and could adversely impact our liquidity. While our estimated future capital requirements are uncertain and could increase or decrease as a result of many factors, including the extent to which we choose to advance our research, development activities, preclinical studies and clinical trials, or if we are in a position to pursue manufacturing or commercialization activities, we will need significant additional capital to develop our product candidates through development and clinical trials, obtain regulatory approvals and manufacture and commercialize approved products, if any. We do not know whether we will be able to access additional capital when needed or on terms favorable to us or our stockholders. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.

As a clinical stage biopharmaceutical company, our business and our ability to execute our strategy to achieve our corporate goals are subject to numerous risks and uncertainties. Material risks and uncertainties relating to our business and our industry are described in "Part I, Item 1A. Risk Factors" in this Annual Report on Form 10-K.

#### **THERMODOX® (DOXORUBICIN ENCAPSULATED IN HEAT-ACTIVATED LIPOSOME)**

Liposomes are manufactured submicroscopic vesicles consisting of a discrete aqueous central compartment surrounded by a membrane bilayer composed of naturally occurring lipids. Conventional liposomes have been designed and manufactured to carry drugs and increase residence time, thus allowing the drugs to remain in the bloodstream for extended periods of time before they are removed from the body. However, the current existing liposomal formulations of cancer drugs and liposomal cancer drugs under development do not provide for the immediate release of the drug and the direct targeting of organ specific tumors, two important characteristics that are required for improving the efficacy of cancer drugs such as doxorubicin. A team of research scientists at Duke University developed a heat-sensitive liposome which rapidly changes its structure when heated to a threshold minimum temperature of 39.5° to 42° Celsius. Heating creates channels in the liposome bilayer that allow an encapsulated drug to rapidly disperse into the surrounding tissue. Through a perpetual, world-wide, exclusive development and commercialization license from Duke University, Celsion has licensed novel, heat-activated liposomal technology that is differentiated from other liposomes through its unique low heat-activated release of encapsulated chemotherapeutic agents.

We intend to use several available focused-heat technologies, such as radio frequency ablation (RFA), microwave energy and high intensity focused ultrasound (HIFU), to activate the release of drugs from our novel heat-sensitive liposomes.

***THERMODOX® IN RELATION TO PRIMARY LIVER CANCER***

**Liver Cancer Overview**

Primary liver cancer (hepatocellular carcinoma or HCC) is one of the most common and deadliest forms of cancer worldwide. It ranks as the fifth most common solid tumor cancer. It is estimated that up to 90% of liver cancer patients will die within five years of diagnosis. The incidence of primary liver cancer is approximately 28,000 cases per year in the United States, approximately 40,000 cases per year in Europe and is rapidly growing worldwide at approximately 750,000 cases per year. HCC has the fastest rate of growth of all cancers and is projected to be the most prevalent form of cancer by 2020. HCC is commonly diagnosed in patients with longstanding hepatic disease and cirrhosis (primarily due to hepatitis C in the U.S. and Europe and hepatitis B in Asia).



At an early stage, the standard first line treatment for liver cancer is surgical resection of the tumor. Up to 80% of patients are ineligible for surgery or transplantation at time of diagnosis as early stage liver cancer generally has few symptoms and when finally detected the tumor frequently is too large for surgery. There are few alternative treatments, since radiation therapy and chemotherapy are largely ineffective. For tumors generally up to 5 centimeters in diameter, RFA has emerged as the standard of care treatment which directly destroys the tumor tissue through the application of high temperatures by a probe inserted into the core of the tumor. Local recurrence rates after RFA directly correlates to the size of the tumor. For tumors 3 cm or smaller in diameter the recurrence rate has been reported to be 10 – 20%; however, for tumors greater than 3 cm, local recurrence rates of 40% or higher have been observed.

### **Celsion's Approach**

While RFA uses extremely high temperatures (greater than 80° Celsius) to ablate the tumor, it may fail to treat micro-metastases in the outer margins of the ablation zone because temperatures in the periphery may not be high enough to destroy the cancer cells. Celsion's ThermoDox® treatment approach is designed to utilize the ability of RFA devices to ablate the center of the tumor while simultaneously thermally activating the ThermoDox® liposome to release its encapsulated doxorubicin to kill remaining viable cancer cells throughout the heated region, including the tumor ablation margins. This novel treatment approach is intended to deliver the drug directly to those cancer cells that survive RFA. This approach will also increase the delivery of the doxorubicin at the desired tumor site while potentially reducing drug exposure distant to the tumor site.

The data from the Company's 701-patient HEAT Study post-hoc analysis suggests that ThermoDox® may substantially improve overall survival, when compared to the control group, in patients if their tumors undergo optimal RFA treatment. We continue to follow patients in the HEAT Study to the secondary endpoint, overall survival (OS). Data from four overall survival sweeps have been conducted since the top line PFS data from the HEAT Study was announced in January 2013, with each showing progressive improvement in statistical significance. In January 2014, we announced that the latest overall survival data from its post-hoc analysis of results from the HEAT Study supports continued clinical development through a prospective pivotal Phase III Study. As reported in January 2014, post-hoc data from the Company's HEAT Study demonstrate that the patient subgroup in the ThermoDox arm whose RFA procedure lasted longer than 45 minutes (285 patients or 63% of single lesion patients), experienced a 55% improvement in overall survival, with a Hazard Ratio of 0.64 (95% CI 0.41 - 1.00) and a P-value = 0.0495.

### **Phase I Clinical Trial - Primary Liver Cancer**

In the second quarter of 2007, we completed our first Phase I single dose escalation clinical trial that investigated ThermoDox® in combination with RFA for the treatment of primary and metastatic liver cancer. The study was carried out at the National Cancer Institute (NCI), which is part of the National Institutes of Health (NIH) and Queen Mary Hospital in Hong Kong.

In 2007 we initiated a second Phase I dose escalation study designed to investigate simplification of the current RFA/ThermoDox® treatment regimen including a single vial formulation of ThermoDox® designed for commercial distribution. The study also permitted multiple dosing in liver cancer patients. This clinical trial was completed in 2008.

#### **701 Patient Global Clinical Trial - Primary Liver Cancer (The HEAT Study)**

The HEAT Study for ThermoDox®, in combination with RFA, was conducted in patients with primary liver cancer under a Special Protocol Assessment agreed to with the FDA. The Special Protocol Assessment (SPA) agreed to with the FDA specified PFS as the HEAT Study's primary endpoint. We scheduled a meeting with the HEAT Study independent DMC on January 30, 2013 in order to conduct an analysis of the HEAT Study's PFS endpoint. Following review by the DMC, on January 31, 2013, we announced that ThermoDox® in combination with RFA did not meet the HEAT Study's primary endpoint of PFS. Specifically, we determined, after conferring with the DMC, that the HEAT Study did not meet the goal of demonstrating persuasive evidence of clinical effectiveness that could form the basis for regulatory approval in the population chosen for the HEAT Study. The HEAT Study was designed to show a 33 percent improvement in PFS with 80 percent power and a p-value = 0.05. In the trial, ThermoDox® was well-tolerated with no unexpected serious adverse events.

As provided for in the SPA, we continue to follow the patients enrolled in the HEAT study to the secondary endpoint of Overall Survival (OS). We have evaluated data from four reviews of overall survival since the announcement of the HEAT study's primary endpoint result. We also completed computational modeling with supplementary preclinical animal studies supporting the relationship between heating duration and clinical outcomes.

In January 2014, we announced that the latest overall survival data from the post-hoc analysis of results from the HEAT study support continued clinical development of ThermoDox® through a prospective pivotal Phase III study, subject to regulatory review and agreement. The post-hoc data demonstrated that the patient subgroup in the ThermoDox® arm whose RFA procedure lasted longer than 45 minutes, which represents 285 patients or 63 percent of single lesion patients, experienced a 55 percent improvement in overall survival, with a Hazard Ratio of 0.64 (95% CI 0.41 - 1.00) and a P-value = 0.0495. Median overall survival for this subgroup has not yet been reached. The post-hoc data suggest that ThermoDox® may substantially improve overall survival, when compared to the control group, in patients if their tumors undergo optimal RFA treatment.

In January 2014, the Company announced that the latest overall survival data from its post-hoc analysis of results from the HEAT Study supports continued clinical development through a prospective pivotal Phase III Study. The data from the HEAT Study post-hoc analysis suggests that ThermoDox® may substantially improve overall survival, when compared to the control group, in patients if their tumors undergo optimal RFA treatment. The Company continues to follow patients in the HEAT Study to the secondary endpoint of OS. Data from four OS sweeps have been conducted since the top line PFS data from the HEAT Study was announced in January 2013, with each showing progressive improvement in statistical significance. We may choose to end the analysis of OS once the median is reached for either or both arms of the HEAT Study.

We will continue with partnerships, such as our arrangement with Zhejiang Hisun Pharmaceutical Co. Ltd. (Hisun) described below, to the extent feasible. In addition, we have assessed our product pipeline and research and development priorities. As we evaluate strategic alternatives, we will need to consider a number of factors, including investment in, or acquisition of, complementary businesses, technologies or products, possible capital raising transactions, partnering opportunities and working capital requirements. We expect that the strength of our balance sheet will afford us the opportunity to evaluate our future development plans. However, as demonstrated by the HEAT Study results on PFS announced on January 31, 2013, drug research and development is an inherently uncertain process and there is a high risk of failure at every stage prior to approval. The timing and the outcome of clinical results is extremely difficult to predict. Clinical development successes and failures can have a disproportionate positive or negative impact on our scientific and medical prospects, financial prospects, financial condition and market value.

### **Phase III Global Clinical Trial - Primary Liver Cancer (The OPTIMA Study)**

Based on the overall survival data from the post-hoc analysis of results from HEAT Study, we submitted our proposed pivotal Phase III clinical protocol for the FDA review in the fourth quarter of 2013. On February 24, 2014, we announced that the FDA, after its customary 30 day review period, has provided and allowed, subject to compliance with regulatory standards, clearance for the Company's planned pivotal, double-blind, placebo-controlled Phase III trial (the OPTIMA Study) of ThermoDox®, its proprietary heat-activated liposomal encapsulation of doxorubicin in combination with radio frequency ablation (RFA) in primary liver cancer. The OPTIMA Study trial design is based on a comprehensive analysis of data from the Company's Phase III HEAT Study, which demonstrated that treatment with ThermoDox resulted in a 55% improvement in overall survival in a substantial number of HCC patients that received an optimized RFA treatment. The Company expects to launch the study in the first half of 2014.

The Phase III OPTIMA Study is designed with extensive input from globally recognized HCC researchers and clinicians, and after formal consultation with FDA. The OPTIMA Study is expected to enroll 550 patients globally, with up to 100 sites in the United States, Europe, China and Asia Pacific and will evaluate ThermoDox in combination with RFA, which will be standardized to a minimum of 45 minutes across all investigators and sites for treating lesions 3 to 7 centimeters, versus standardized RFA alone. As reported in January 2014, post-hoc data from the Company's HEAT Study demonstrate that the patient subgroup in the ThermoDox® arm whose RFA procedure lasted longer than 45 minutes (285 patients or 63% of single lesion patients), experienced a 55% improvement in overall survival, with a Hazard Ratio of 0.64 (95% CI 0.41 - 1.00) and a P-value = 0.0495. The primary endpoint for the trial is overall survival, and the secondary endpoint for the trial is PFS and Safety. The statistical plan calls for two interim efficacy analyses by an independent Data Monitoring Committee (iDMC).

In addition, the Company recently met with the China FDA to discuss, among other items, the Phase III OPTIMA Study, including minimum patient enrollment requirements supporting ThermoDox's registration in China. Based on those discussions, the Company is submitting an application for accelerated approval of the study in China. The Company plans to expand its clinical site footprint in Europe for the OPTIMA Study and will meet with the EMA in the first half of 2014.

### ***THERMODOX® IN RELATION TO CANCERS OTHER THAN PRIMARY LIVER CANCER***

In June 2012, we announced a collaboration with the University of Oxford to begin an early phase clinical study of ThermoDox® plus HIFU in the treatment of metastatic liver cancer. The trial, which is supported by the National Institute for Health Research Oxford Biomedical Research Centre, will be carried out as a multidisciplinary collaboration between us, the Oxford University Institute of Biomedical Engineering and the Oxford University Hospitals NHS Trust. This early phase clinical study is being finalized and will require approval from a local ethics committee. Enrollment of the first patient in this clinical study is targeted for 2014.

In collaboration with the Focused Ultrasound Foundation, we are sponsoring preclinical studies designed to explore the use of ThermoDox® in combination with MR-guided HIFU for the treatment of pancreatic cancer. The studies are being conducted at the University of Washington (UW) School of Medicine. The UW research includes animal models to confirm the ability of HIFU to target concentrations of doxorubicin in proprietary pancreatic cancer cell lines and in vivo studies to assess the response to these tumors treated using ThermoDox® with and without HIFU-induced hyperthermia. We believe that these collaborations are providing important new device technologies such as HIFU to activate our low heat sensitive liposomal technology in difficult-to-treat cancers.

### **Recurrent Chest Wall (RCW) Breast Cancer Overview**

Breast cancer is the most common malignancy in women in both the United States and the world. Despite a variety of therapeutic approaches, up to 40% of the estimated 95,000 patients in the United States undergoing a mastectomy as their primary treatment will develop locally recurrent RCW breast cancer. There is currently no effective chemotherapeutic standard of care for RCW breast cancer and as a result, many of these patients will die within two years of the recurrence. Patients with RCW breast cancer suffer from disfiguring tumors and other symptoms including pain, foul-smelling wounds, and a very visual reminder of tumor progression.

### **Celsion's Approach**

We have been actively seeking a targeted localized treatment for breast cancer using ThermoDox® in conjunction with localized microwave hyperthermia to treat RCW breast cancer. Studies at Duke University and other centers have indicated that heat may improve the therapeutic action of non-temperature sensitive liposomal doxorubicin formulations in advanced loco-regional breast cancer. Our liposomal encapsulated doxorubicin is released by heat generated from an external microwave tissue hyperthermia device that is placed on a woman's chest. The microwave hyperthermia heats the target to a temperature adequate to activate ThermoDox® but not to ablate the tissue like RFA. Upon heating to 39.5° to 42° C, a significant concentration of doxorubicin is released directly to the tumor. As in our liver cancer program, we use a commercially available thermotherapy device to heat the target tissue and activate ThermoDox® at the desired target site.

Microwave hyperthermia as a separate standalone treatment has been found to have the ability to kill breast cancer cells. Because breast cancer cells have higher water content than surrounding normal cells, the tumor is heated to a greater extent than normal breast tissue and is selectively destroyed. Thus heating cancer cells with a microwave device for sixty minutes at 43°C has been found to be tumoricidal. We expect that the combination of microwave hyperthermia and ThermoDox® will be more efficacious than microwave hyperthermia alone or treatment with existing non-heat activated liposomal formulations.

#### **Breast Cancer Clinical Phase I/II Clinical Trial - The DIGNITY Study**

In 2009, the Company commenced an open label, dose-escalating ThermoDox® Phase I/Phase II clinical trial for patients with RCW breast cancer – (the DIGNITY study). The DIGNITY study is designed to establish a safe therapeutic dose in Phase I, and in Phase II to demonstrate local control, including complete and partial responses, and stable disease as its primary endpoint. The DIGNITY study is also planned to evaluate kinetics in ThermoDox® produced from more than one manufacturing site.

The Company completed enrollment of the Phase I portion of the study in 2010 and an independent Data Safety Monitoring Board declared 50mg/m<sup>2</sup> to be the Phase II dose. The Phase II portion of the DIGNITY study protocol has been reviewed by the FDA and enrollment commenced in the first quarter of 2013. The trial will enroll 20 patients at five clinical sites in the United States and is evaluating ThermoDox® in combination with mild hyperthermia.

Duke University conducted a Phase I dose escalating ThermoDox® study in patients with RCW breast cancer and has presented preliminary results from the 16 enrolled patients that characterize the safety of the drug in RCW patients and the feasibility of ThermoDox® administration in these patients. In December 2013, we announced combined clinical data from our DIGNITY study and the Duke University sponsored Phase I trial of ThermoDox® plus hyperthermia in RCW breast cancer. The two similarly designed Phase I studies enrolled patients with highly resistant tumors found on the chest wall and who had progressed on previous therapy including chemotherapy, radiation therapy and hormone therapy. ThermoDox® in combination with mild hyperthermia was evaluated in these patients in up to six cycles. Both studies employed an open label 3+3 dose escalation study design to determine the Maximum Tolerated Dose, evaluate safety and determine early effects of ThermoDox® in combination with mild hyperthermia. There were 29 patients treated in the two trials, including 11 patients in the DIGNITY study and 18 patients in the Duke study. Of the 29 patients, 23 were eligible for evaluation of efficacy. A local response rate of over 60 percent was reported in 14 of the 23 evaluable patients with five complete responses and nine partial responses.

In February 2014, we announced positive interim data from the ongoing open-label Phase II DIGNITY study. Based on the data available to date, a local response rate of approximately 80 percent has been observed in the five evaluable patients with refractory disease, notably two complete responses, two partial responses and one patient with stable disease. These data are consistent with the previously reported positive Phase I data in RCW breast cancer.

## **PRODUCT FEASIBILITY**

We developed a stable heat activated liposomal formulation of docetaxel and evaluated the liposomal docetaxel formulation in animal studies that demonstrated a statistically significant tumor inhibition effect when compared both to free docetaxel and a non-heat sensitive formulation. We will continue to evaluate this formulation following a successful clinical program utilizing ThermoDox®. In addition, the Company has developed a third stable heat activated liposomal formulation. This drug encapsulates carboplatin and in early studies has shown favorable release characteristics and formulation stability.

## **BUSINESS STRATEGY**

An element of our business strategy has been to pursue, as resources permit, the research and development of a range of product candidates for a variety of indications. We may also evaluate licensing cancer products from third parties

for cancer treatments to expand our current product pipeline. This is intended to allow us to diversify the risks associated with our research and development expenditures. To the extent we are unable to maintain a broad range of product candidates, our dependence on the success of one or a few product candidates would increase and results such as those announced in relation to the HEAT study on January 31, 2013 will have a more significant impact on our financial prospects, financial condition and market value. We may also consider and evaluate strategic alternatives, including investment in, or acquisition of, complementary businesses, technologies or products. As demonstrated by the HEAT Study results, drug research and development is an inherently uncertain process and there is a high risk of failure at every stage prior to approval. The timing and the outcome of clinical results is extremely difficult to predict. The success or failure of any preclinical development and clinical trial can have a disproportionately positive or negative impact on our results of operations, financial condition, prospects and market value.

As a result of the risks and uncertainties discussed in this Annual Report on Form 10-K, among others, we are unable to estimate the duration and completion costs of our research and development projects or when, if ever, and to what extent we will receive cash inflows from the commercialization and sale of a product if one of our product candidates receives regulatory approval for marketing, if at all. Our inability to complete any of our research and development activities, preclinical studies or clinical trials in a timely manner or our failure to enter into collaborative agreements when appropriate could significantly increase our capital requirements and could adversely impact our liquidity. While our estimated future capital requirements are uncertain and could increase or decrease as a result of many factors, including the extent to which we choose to advance our research and development activities, preclinical studies and clinical trials, or whether we are in a position to pursue manufacturing or commercialization activities, we will need significant additional capital to develop our product candidates through development and clinical trials, obtain regulatory approvals and manufacture and commercialize approved products, if any. We do not know whether we will be able to access additional capital when needed or on terms favorable to us or our stockholders. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.



## RESEARCH AND DEVELOPMENT EXPENDITURES

We are engaged in a limited amount of research and development in our own facilities and have sponsored research programs in partnership with various research institutions, including the National Cancer Institute and Duke University. We are currently, with minimal cash expenditures, sponsoring clinical and pre-clinical research at the University of Utrecht, Brigham and Women's Hospital and the University of Washington. The majority of the spending in research and development is for the funding of ThermoDox® clinical trials. Research and development expenses were approximately \$9.4 million, \$15.8 million and \$19.9 million for the years ended December 31, 2013, 2012 and 2011, respectively. See *Item 7 – Management's Discussion and Analysis of Financial Condition and Results of Operation* for additional information regarding expenditures related to our research and development programs.

## GOVERNMENT REGULATION

### *Regulation in the United States*

#### **Research and Development**

Our research and development activities, pre-clinical tests and clinical trials are subject to extensive regulation by the FDA as would the manufacturing, marketing and labeling of our products, if any. The Federal Food, Drug and Cosmetic Act, the Public Health Service Act and the regulations promulgated by the FDA govern, among other things, the testing, manufacture, safety, efficacy, labeling, storage, record keeping, approval, advertising, promotion, import and export of our products.

Under these statutes, our heat-activated liposomes will be regulated as a new drug. The steps ordinarily required before such products can be marketed in the U.S. include (a) pre-clinical and clinical studies; (b) the submission to the FDA of an application for, or approval, as an Investigational New Drug application (IND), which must become effective before human clinical trials may commence; (c) adequate and well-controlled human clinical trials to establish the safety and efficacy of the product; (d) the submission to the FDA of a New Drug Application (NDA); and (e) FDA approval of the application, including approval of all product labeling.

Pre-clinical tests include laboratory evaluation of product chemistry, formulation and stability, as well as animal studies, to assess the potential safety and efficacy of the product. Pre-clinical safety tests must be conducted by laboratories that comply with FDA regulations regarding good laboratory practice. The results of pre-clinical tests are submitted to the FDA as part of an IND and are reviewed by the FDA before the commencement of human clinical

trials. Submission of an IND will not necessarily result in FDA authorization to commence clinical trials, and the absence of FDA objection to an IND does not necessarily mean that the FDA will ultimately approve an NDA or that a product candidate otherwise will come to market.

Clinical trials involve the administration of therapy to humans under the supervision of a qualified principal investigator. Clinical trials must be conducted in accordance with good clinical practices under protocols submitted to the FDA as part of an IND. Also, each clinical trial must be approved and conducted under the auspices of an internal review board (IRB), and with patient informed consent. An IRB will consider, among other things, ethical factors and the safety of human subjects and the possible liability of the institution conducting the clinical trials.

Clinical trials are typically conducted in two or three sequential phases, but the phases may overlap. Phase I clinical trials involve the initial introduction of the therapy to a small number of subjects. Phase II trials are generally larger trials conducted in the target population. Phase II studies may serve as the pivotal trials, providing the demonstration of safety and effectiveness required for approval. However, the FDA may require additional, post-market trials as a condition of approval. In the case of drugs and biological products, Phase II clinical trials generally are conducted in a target patient population to gather evidence about the pharmacokinetics, safety and biological or clinical efficacy of the drug for specific indications, to determine dosage tolerance and optimal dosage and to identify possible adverse effects and safety risks. When a drug or biological compound has shown evidence of efficacy and an acceptable safety profile in Phase II evaluations, Phase III clinical trials are undertaken to serve as the pivotal trials to demonstrate clinical efficacy and safety in an expanded patient population.

There can be no assurance that any of our clinical trials will be completed successfully within any specified time period or at all. On January 31, 2013, we announced that ThermoDox® in combination with RFA did not meet the primary endpoint of the HEAT study in patients with hepatocellular carcinoma (HCC), also known as primary liver cancer. Specifically, we determined, after conferring with the DMC, that the HEAT study did not meet the goal of demonstrating persuasive evidence of clinical effectiveness that could form the basis for regulatory approval in the population chosen for the HEAT study.

On February 24, 2014, we announced that the FDA, after its customary 30 day review period, has provided and allowed, subject to compliance with regulatory standards, clearance for the Company's planned pivotal, double-blind, placebo-controlled Phase III trial (the OPTIMA Study) of ThermoDox®, its proprietary heat-activated liposomal encapsulation of doxorubicin in combination with RFA in primary liver cancer, also known as hepatocellular carcinoma (HCC). The OPTIMA Study trial design is based on a comprehensive analysis of data from the Company's Phase III HEAT Study, which demonstrated that treatment with ThermoDox resulted in a 55% improvement in overall survival in a substantial number of HCC patients that received an optimized RFA treatment. Celsion expects to launch the study in the first half of 2014.

The Phase III OPTIMA Study is designed with extensive input from globally recognized HCC researchers and clinicians, and after formal consultation with FDA. The OPTIMA Study is expected to enroll 550 patients globally, with up to 100 sites in the United States, Europe, China and Asia Pacific and will evaluate ThermoDox in combination with RFA, which will be standardized to a minimum of 45 minutes across all investigators and sites for treating lesions 3 to 7 centimeters, versus standardized RFA alone. The primary endpoint for the trial is OS. The statistical plan calls for two interim efficacy analyses by an independent Data Monitoring Committee (iDMC).

In addition, the Company recently met with the CHINA FDA to discuss the Phase III OPTIMA Study, including minimum patient enrollment requirements supporting ThermoDox's registration in China. Based on those discussions, the Company is submitting an application for accelerated approval of the study in China. The Company plans to expand its clinical site footprint in Europe for the OPTIMA Study and will meet with the EMA in the first half of 2014.

Either the FDA or we may suspend clinical trials at any time, if the FDA, our iDMC, or we conclude that clinical subjects are being exposed to an unacceptable health risk or for other reasons. The FDA inspects and reviews clinical trial sites, informed consent forms, data from the clinical trial sites (including case report forms and record keeping procedures) and the performance of the protocols by clinical trial personnel to determine compliance with good clinical practices. The FDA also examines whether there was bias in the conduct of clinical trials. The conduct of clinical trials is complex and difficult, especially in pivotal Phase II or Phase III trials. There can be no assurance that the design or the performance of the pivotal clinical trial protocols or any of our current or future product candidates will be successful.

The results of pre-clinical studies and clinical trials, if successful, are submitted in an application for FDA approval to market the drug or biological product for a specified use. The testing and approval process requires substantial time and effort, and there can be no assurance that any approval will be granted for any product at any time, according to any schedule, or at all. The FDA may refuse to accept or approve an application if it believes that applicable regulatory criteria are not satisfied. The FDA may also require additional testing for safety and efficacy. Moreover, if regulatory approval is granted, the approval will be limited to specific indications. There can be no assurance that any of our current product candidates will receive regulatory approvals for marketing or, if approved, that approval will be for any or all of the indications that we request.

In 2009, the FDA granted orphan drug designation for ThermoDox® for the treatment of HCC. Orphan drug designation entitles the Company to seven years of market exclusivity following FDA approval, if any, FDA assistance in clinical trial design, a reduction in FDA user fees, U.S. tax credits related to development expenses as well as the opportunity to apply for funding from the U.S. government to defray the costs of clinical trial expenses.

## **Post-Approval Requirements**

After receipt of necessary regulatory approvals, if any, for initial manufacturing and sale of our product candidates, our contract manufacturing facilities and products are subject to ongoing review and periodic inspection. Each U.S. drug manufacturing establishment must be registered with the FDA. Manufacturing establishments in the U.S. and abroad are subject to inspections by the FDA and must comply with current good manufacturing practices. In order to ensure full technical compliance with such practices, manufacturers must expend funds, time and effort in the areas of production and quality control. In addition, the FDA may impose post-approval requirements on us, including the requirement that we conduct specified post-marketing studies.

## **Inspections**

We are subject to the periodic inspection of our clinical trials, facilities, procedures and operations and/or the testing of our products by the FDA to determine whether our systems and processes are in compliance with FDA regulations. Following such inspections, the FDA may issue notices on Form 483 and warning letters that could cause us to modify certain activities identified during the inspection. A Form 483 notice is generally issued at the conclusion of an FDA inspection and lists conditions the FDA inspectors believe may violate FDA regulations. FDA guidelines specify that a warning letter only is to be issued for violations of “regulatory significance” for which the failure to adequately and promptly achieve correction may be expected to result in an enforcement action.

## **Recalls**

The FDA has the authority to require the recall of our products in the event of material deficiencies or defects in manufacture. A governmentally mandated recall, or a voluntary recall by us, could result from a number of events or factors, including component failures, manufacturing errors, instability of product or defects in labeling.

## **Other FDA Regulations**

We are also subject to recordkeeping and reporting regulations. These regulations require, among other things, the reporting to the FDA of adverse events alleged to have been associated with the use of a product or in connection with certain product failures.

Labeling and promotional activities are also regulated by the FDA. We must also comply with record keeping requirements as well as requirements to report certain adverse events involving our products. The FDA can impose other post-marketing controls on us as well as our products including, but not limited to, restrictions on sale and use, through the approval process, regulations and otherwise.

### *Regulation Outside of the U.S.*

In addition to regulations in the U.S., we will be subject to regulations of other countries governing any clinical trials and commercial sales and distribution of our product candidates. Whether or not we obtain FDA approval for a product, we must obtain approval by the comparable regulatory authorities of countries outside of the U.S. before we can commence clinical trials in such countries and approval of the regulators of such countries or economic areas, such as the European Union and China, before we may market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Under European Union regulatory systems, a company may submit marketing authorization applications either under a centralized or decentralized procedure. The centralized procedure, which is compulsory for medicines produced by biotechnology or those medicines intended to treat AIDS, cancer, neurodegenerative disorders or diabetes and is optional for those medicines which are highly innovative, provides for the grant of a single marketing authorization that is valid for all European Union member states. The decentralized procedure provides for mutual recognition of national approval decisions. Under this procedure, the holder of a national marketing authorization may submit an application to the remaining member states. Within 90 days of receiving the applications and assessments report, each member state must decide whether to recognize approval. If a member state does not recognize the marketing authorization, the disputed points are eventually referred to the European Commission, whose decision is binding on all member states.

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In 2011, the European Commission granted orphan drug designation for ThermoDox® for the treatment of HCC in Europe. As established by the EMA, orphan drug designation provides for scientific advice and regulatory assistance from the EMA, direct access to centralized marketing authorization and certain financial incentives, such as reduction of fees associated with pre-authorization inspections and marketing authorization application fees. The orphan drug designation in Europe also provides 10 years of market exclusivity subsequent to product approval.

## **PRODUCT LIABILITY AND INSURANCE**

Our business exposes us to potential product liability risks that are inherent in the testing, manufacturing and marketing of human therapeutic products. We presently have product liability insurance limited to \$10 million per incident, and if we were to be subject to a claim in excess of this coverage or to a claim not covered by our insurance and the claim succeeded, we would be required to pay the claim out of our own limited resources.

## **COMPETITION**

Competition in the discovery and development of new methods for treating and preventing disease is intense. We face, and will continue to face, intense competition from pharmaceutical and biotechnology companies, as well as academic and research institutions and government agencies both in the U.S. and abroad. We face significant competition from organizations pursuing the same or similar technologies used by us in our drug discovery efforts and from organizations developing pharmaceuticals that are competitive with our product candidates.

Most of our competitors, either alone or together with their collaborative partners, have substantially greater financial resources and larger research and development staffs than we do. In addition, most of these organizations, either alone or together with their collaborators, have significantly greater experience than we do in developing products, undertaking preclinical testing and clinical trials, obtaining FDA and other regulatory approvals of products, and manufacturing and marketing products. Mergers and acquisitions in the pharmaceutical industry may result in even more resources being concentrated among our competitors. These companies, as well as academic institutions, governmental agencies, and private research organizations, also compete with us in recruiting and retaining highly qualified scientific personnel and consultants. Our ability to compete successfully with other companies in the pharmaceutical and biotechnology field also depends on the status of our collaborations and on the continuing availability of capital to us.

**ThermoDox®**

Although there are many drugs and devices marketed and under development for the treatment of cancer, the Company is not aware of any other heat activated drug delivery product either being marketed or in human clinical development.

## **LICENSES, PATENTS AND TRADEMARKS**

In 1999, the Company entered into a license agreement with Duke University under which we received exclusive rights, subject to certain exceptions, to commercialize and use Duke's thermo-liposome technology. In relation to these liposome patents licensed from Duke University, we have filed two additional patents related to the formulation and use of liposomes. We have also licensed from Valentis, CA certain global rights covering the use of pegylation for temperature sensitive liposomes.

In 2003, our obligations under the license agreement with Duke University with respect to the testing and regulatory milestones and other licensed technology performance deadlines were eliminated in exchange for a payment of shares of our common stock. The license agreement continues to be subject to agreements to pay a royalty based upon future sales. In conjunction with the patent holder, we have filed international applications for a certain number of the United States patents.

Our rights under the license agreement with Duke University extend for the longer of 20 years or the end of any term for which any relevant patents are issued by the United States Patent and Trademark Office. Currently, the Company has rights to Duke's patent for its thermo-liposome technology in the United States, which expires in 2018, and to future patents received by Duke in Canada, Europe, Japan and Australia, where it has patent applications have been granted. The European grant provides coverage in the European Community. For this technology, the Company's license rights are worldwide, including the United States, Canada, certain European countries, Australia, Hong Kong, and Japan.



On February 5, 2013, Celsion announced that its proprietary patent application, "Method of Storing Nanoparticle Formulations," had been allowed in China and granted in South Korea and Australia. Celsion holds an exclusive license agreement with Duke University for its temperature-sensitive liposome technology that covers the ThermoDox® formulation. Celsion's newly issued patents pertain specifically to methods of storing stabilized, temperature-sensitive liposomal formulations and will assist in the protection of global rights. These patents will extend the overall term of the ThermoDox® patent portfolio to 2026. The patents in these three countries are the first in this family, which includes pending applications in the U.S., Europe and additional key commercial geographies in Asia. This extended patent runway to 2026 allows for the evaluation of future development activities for ThermoDox® and Celsion's heat-sensitive liposome technology platform.

In addition to the rights available to us under completed or pending license agreements, we rely on our proprietary know-how and experience in the development and use of heat for medical therapies, which we seek to protect, in part, through proprietary information agreements with employees, consultants and others. There can be no assurance that these proprietary information agreements will not be breached, that we will have adequate remedies for any breach, or that these agreements, even if fully enforced, will be adequate to prevent third-party use of the Company's proprietary technology. Please refer to Item 1A, Risk Factors, including, but not limited to, "We rely on trade secret protection and other unpatented proprietary rights for important proprietary technologies, and any loss of such rights could harm our business, results of operations and financial condition." Similarly, we cannot guarantee that technology rights licensed to us by others will not be successfully challenged or circumvented by third parties, or that the rights granted will provide us with adequate protection. Please refer to Item 1A, Risk Factors, including, but not limited to, "Our business depends on licensing agreements with third parties to permit us to use patented technologies. The loss of any of our rights under these agreements could impair our ability to develop and market our products."

## **EMPLOYEES**

As of March 12, 2014, we employed 13 full-time employees. We also maintain active independent contractor relationships with various individuals, most of whom have month-to-month or annual consulting agreements. None of our employees are covered by a collective bargaining agreement, and we consider our relations with our employees to be good.

## **COMPANY INFORMATION**

Celsion was founded in 1982 and is a Delaware corporation. Our principal executive offices are located at 997 Lenox Drive, Suite 100, Lawrenceville, NJ 08648. Our telephone number is (609) 896-9100. The Company's website is [www.celsion.com](http://www.celsion.com). The information contained in, or that can be accessed through, our website is not part of, and is not incorporated in, this Annual Report on Form 10-K.

## AVAILABLE INFORMATION

We make available free of charge through our website, [www.celsion.com](http://www.celsion.com), our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the Securities and Exchange Commission (the "SEC"). In addition, our website includes other items related to corporate governance matters, including, among other things, our corporate governance principles, charters of various committees of the Board of Directors, and our code of business conduct and ethics applicable to all employees, officers and directors. We intend to disclose on our internet website any amendments to or waivers from our code of business conduct and ethics as well as any amendments to its corporate governance principles or the charters of various committees of the Board of Directors. Copies of these documents may be obtained, free of charge, from our website. In addition, copies of these documents will be made available free of charge upon written request. The public may read and copy any materials filed with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file periodic and other reports electronically with the Securities and Exchange Commission. The address of that site is [www.sec.gov](http://www.sec.gov). The information available on or through our website is not a part of this Annual Report on Form 10-K and should not be relied upon.

## LIQUIDITY AND CAPITAL RESOURCES

During 2013, we issued a total of 5.3 million shares of common stock, including shares of common stock issued upon conversion of the 15,000.00422 shares of Series A 0% convertible preferred stock, in the following equity transactions for an aggregate \$31.6 million in gross proceeds. On October 28, 2013, we effected a 4.5-to-1 reverse split of our common stock. Unless otherwise expressly stated, the share and per share data in this section and elsewhere in this Annual Report on Form 10-K have been adjusted to reflect the reverse stock split.

On February 1, 2013, we entered into a Controlled Equity Offering<sup>SM</sup> Sales Agreement with Cantor Fitzgerald & Co., as sales agent, pursuant to which we may offer and sell, from time to time through “at-the-market” offerings, shares of our common stock having an aggregate offering price of up to \$25.0 million. From February 1, 2013 through February 25, 2013, we sold and issued an aggregate of 1,195,923 shares of common stock under such agreement for approximately \$6.8 million in aggregate gross proceeds.

On February 22, 2013, we entered into a Securities Purchase Agreement with certain institutional investors, pursuant to which we sold, in a registered direct offering, an aggregate of 15,000.00422 shares of our Series A 0% convertible preferred stock and warrants to purchase up to 1,341,382 shares of common stock, for an aggregate purchase price of approximately \$15.0 million in gross proceeds. All of the shares of Series A 0% convertible preferred stock have been converted into 2,682,764 shares of common stock.

On May 30, 2013, we entered into a Securities Purchase Agreement with certain institutional investors, pursuant to which we sold, in a registered direct offering, an aggregate of 1,392,109 shares of our common stock for an aggregate purchase price of approximately \$9.8 million in gross proceeds.

During 2013, we received gross proceeds of approximately \$0.4 million from the exercise of warrants and common stock options to purchase 30,499 shares of common stock.

In addition, the Company entered into a loan agreement on November 25, 2013 with Hercules Technology Growth Capital, Inc. (Hercules), pursuant to which the Company may borrow a secured term loan of up to \$20 million in multiple tranches (the Hercules Credit Agreement). The Company drew the first tranche of \$5 million at the closing under the Hercules Credit Agreement on November 25, 2013 and may request, subject to Hercules’ consent in its sole discretion, an additional \$15 million in up to three advances with each advance in a minimum amount of \$5 million, unless otherwise agreed upon by the Company and Hercules, before June 30, 2014 unless extended upon Hercules’ consent. The Company used approximately \$4 million of the first tranche to repay the outstanding obligations under a loan agreement with Oxford Finance LLC and Horizon Technology Finance Corporation. The Company anticipates that it will use any additional funding up to \$15 million as provided under the agreement for working capital or in support of its previously announced strategic acquisition initiative, which is designed to identify new technologies and clinical stage products for its development pipeline. The loan bears interest at a floating per annum rate equal to the greater of (i) 11.25 percent and (ii) the sum of 11.25 per cent plus the prime rate minus 3.25 per cent. Payments under

the loan agreement are interest only for the first twelve months after loan closing, followed by a 30-month amortization period of principal and interest through the scheduled maturity date.

We believe that our cash and investment resources of \$43.1 million on hand at December 31, 2013, as well as the \$13.8 million of net proceeds the Company received in the first quarter of 2014 from the January 15, 2014 common stock offering, are sufficient to fund operations through 2016. However, our future capital requirements will depend upon numerous unpredictable factors, including, without limitation, the cost, timing, progress and outcomes of clinical studies and regulatory reviews of our proprietary drug candidates, our efforts to implement new collaborations, licenses and strategic transactions, general and administrative expenses, capital expenditures and other unforeseen uses of cash. To complete the development and commercialization of our products, we will need to raise substantial amounts of additional capital to fund our operations. We do not have any committed sources of financing and cannot give assurance that alternate funding will be available in a timely manner, on acceptable terms or at all. We may need to pursue dilutive equity financings, such as the issuance of shares of common stock, preferred stock, convertible debt or other convertible or exercisable securities, which financings could dilute the percentage ownership of our current common stockholders and could significantly lower the market value of our common stock.

## RECENT EVENTS

### January 2014 Registered Direct Offering

On January 15, 2014, the Company entered into a Securities Purchase Agreement with certain institutional investors, pursuant to which the Company sold, in a registered offering, an aggregate of 3,603,604 shares of its common stock, par value \$0.01 per share, and warrants to purchase up to 1,801,802 shares of Common Stock, for an aggregate purchase price of approximately \$15 million.

On February 24, 2014, we announced that the FDA, after its customary 30 day review period, has provided and allowed, subject to compliance with regulatory standards, clearance for our planned pivotal, double-blind, placebo-controlled Phase III trial (the OPTIMA Study) of ThermoDox® in combination with RFA in primary liver cancer (HCC). The OPTIMA Study trial design is based on the comprehensive analysis of data from the Phase III HEAT study, which demonstrated that treatment with ThermoDox® resulted in a 55 percent improvement in overall survival in a substantial number of HCC patients that received an optimized RFA treatment. The Company expects to launch the study in the first half of 2014. The OPTIMA study is designed with extensive input from globally recognized HCC researchers and clinicians and after formal consultation with FDA. The OPTIMA study is expected to enroll 550 patients globally, with up to 100 sites in the United States, Europe, China and Asia Pacific, and will evaluate ThermoDox® in combination with RFA, which will be standardized to a minimum of 45 minutes across all investigators and sites for treating lesions 3 to 7 centimeters, versus standardized RFA alone. The primary endpoint for the trial is overall survival, and the secondary endpoint for the trial is PFS and Safety. The statistical plan calls for two interim efficacy analyses by an independent Data Monitoring Committee.

In addition, the Company recently met with the China State Food and Drug Administration (CHINA FDA) to discuss the OPTIMA Phase III trial, including minimum patient enrollment requirements supporting ThermoDox's registration in China. Based on those discussions, the Company is submitting an application for accelerated approval of the study in China. The Company plans to expand its clinical site footprint in Europe and meet with the European Medicines Agency (EMA) in the first half of 2014.

## ITEM 1A. RISK FACTORS

*We are providing the following cautionary discussion of risk factors, uncertainties and assumptions that we believe are relevant to our business. These are factors that, individually or in the aggregate, we think could cause our actual results to differ significantly from expected or historical results and our forward-looking statements. We note these factors for investors as permitted by Section 21E of the Securities Exchange Act of 1934, as amended (Exchange Act), and Section 27A of the Securities Act of 1933, as amended (Securities Act). You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider the following to be a complete discussion of all potential risks or uncertainties that may impact our business. Moreover, we operate in a competitive and rapidly changing environment. New factors emerge from time to time and it is not possible to predict the impact of all of these factors on our business, financial condition or results of operations. We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events, or otherwise.*

### RISKS RELATED TO OUR BUSINESS

**We have a history of significant losses from operations and expect to continue to incur significant losses for the foreseeable future.**

Since our inception, our expenses have substantially exceeded our revenues, resulting in continuing losses and an accumulated deficit of \$169 million at December 31, 2013. For the year ended December 31, 2011, 2012 and 2013, we incurred a net loss of \$23.2 million, \$26.6 million and \$8.3 million, respectively. We currently have no product revenue and do not expect to generate any product revenue for the foreseeable future. Because we are committed to continuing our product research, development, clinical trial and commercialization programs, we will continue to incur significant operating losses unless and until we complete the development of ThermoDox® and other new products and these products have been clinically tested, approved by the U.S. Food and Drug Administration (FDA) and successfully marketed. The amount of future losses is uncertain. Our ability to achieve profitability, if ever, will depend on, among other things, us or our collaborators successfully developing product candidates, obtaining regulatory approvals to market and commercialize product candidates, manufacturing any approved products on commercially reasonable terms, establishing a sales and marketing organization or suitable third party alternatives for any approved product and raising sufficient funds to finance business activities. If we or our collaborators are unable to develop and commercialize one or more of our product candidates or if sales revenue from any product candidate that receives approval is insufficient, we will not achieve profitability, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

**Drug development is an inherently uncertain process with a high risk of failure at every stage of development. Our lead drug candidate failed to meet its primary endpoint in the Phase III HEAT study.**

On January 31, 2013, we announced that our lead product ThermoDox® in combination with radiofrequency ablation (RFA) failed to meet the primary endpoint of the Phase III clinical trial for primary liver cancer, known as the HEAT study. We have not completed our final analysis of the data and do not know the extent to which, if any, the failure of ThermoDox® to meet its primary endpoint in the Phase III trial could impact our other ongoing studies of ThermoDox®. We expect to launch a pivotal, double-blind, placebo-controlled Phase III trial of ThermoDox® in combination with RFA in primary liver cancer, known as the OPTIMA study, in the first half of 2014. The trial design of the OPTIMA study is based on the overall survival data from the post-hoc analysis of results from the HEAT study. ThermoDox® is also being evaluated in a Phase II clinical trial for recurrent chest wall breast cancer and other preclinical studies.

Preclinical testing and clinical trials are long, expensive and highly uncertain processes and failure can unexpectedly occur at any stage of clinical development, as evidenced by the failure of ThermoDox® to meet its primary endpoint in the HEAT study. Drug development is very risky. It will take us several years to complete clinical trials. The start or end of a clinical trial is often delayed or halted due to changing regulatory requirements, manufacturing challenges, required clinical trial administrative actions, slower than anticipated patient enrollment, changing standards of care, availability or prevalence of use of a comparator drug or required prior therapy, clinical outcomes including insufficient efficacy, safety concerns, or our own financial constraints. The results from preclinical testing or early clinical trials of a product candidate may not predict the results that will be obtained in later phase clinical trials of the product candidate. We, the FDA or other applicable regulatory authorities may suspend clinical trials of a product candidate at any time for various reasons, including a belief that subjects participating in such trials are being exposed to unacceptable health risks or adverse side effects. We may not have the financial resources to continue development of, or to enter into collaborations for, a product candidate if we experience any problems or other unforeseen events that delay or prevent regulatory approval of, or our ability to commercialize, product candidates. The failure of one or more of our drug candidates or development programs could have a material adverse effect on our business, financial condition and results of operations.

**If we do not obtain or maintain FDA and foreign regulatory approvals for our drug candidates on a timely basis, or at all, or if the terms of any approval impose significant restrictions or limitations on use, we will be unable to sell those products and our business, results of operations and financial condition will be negatively affected.**

To obtain regulatory approvals from the FDA and foreign regulatory agencies, we must conduct clinical trials demonstrating that our products are safe and effective. We may need to amend ongoing trials or the FDA and/or foreign regulatory agencies may require us to perform additional trials beyond those we planned. This process generally takes a number of years and requires the expenditure of substantial resources. The time required for completing testing and obtaining approvals is uncertain, and the FDA and foreign regulatory agencies have substantial discretion, at any phase of development, to terminate clinical studies, require additional clinical development or other testing, delay or withhold registration and marketing approval and mandate product withdrawals, including recalls. In addition, undesirable side effects caused by our drug candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restricted label or the delay or denial of regulatory approval by regulatory authorities. Even if we receive regulatory approval of a product, the approval may limit the indicated uses for which the drug may be marketed. The failure to obtain timely regulatory approval of product candidates, any product marketing limitations or a product withdrawal would negatively impact our business, results of operations and financial condition.

**We do not expect to generate revenue for the foreseeable future.**

We have devoted our resources to developing a new generation of products and will not be able to market these products until we have completed clinical trials and obtain all necessary governmental approvals. Our lead product candidate, ThermoDox®, is still in various stages of development and trials and cannot be marketed until we have completed clinical testing and obtained necessary governmental approval. Following our announcement on January 31, 2013 that the HEAT study failed to meet its primary endpoint of progression free survival, we continue to follow the patients enrolled in the Heat study to the secondary endpoint, overall survival. Based on the overall survival data from the post-hoc analysis of results from the HEAT study, we plan to launch a pivotal, double-blind, placebo-controlled Phase III trial of ThermoDox® in combination with RFA in primary liver cancer, known as the OPTIMA study, in the first half of 2014. ThermoDox® is currently also being evaluated in Phase II clinical trials and other preclinical studies. We do not expect to realize any revenue from product sales in the next several years, if at all. Accordingly, our revenue sources are, and will remain, extremely limited until our product candidates are clinically tested, approved by the FDA or foreign regulatory agencies and successfully marketed. We cannot guarantee that any of our product candidates will be successfully tested, approved by the FDA or foreign regulatory agency or marketed, successfully or otherwise, at any time in the foreseeable future or at all.

**We will need to raise substantial additional capital to fund our planned future operations, and we may be unable to secure such capital without dilutive financing transactions. If we are not able to raise additional capital, we may not be able to complete the development, testing and commercialization of our product candidates.**



As of December 31, 2013, we had approximately \$ 43.1 million in cash, cash equivalents and short-term investments. We have substantial future capital requirements to continue our research and development activities and advance our drug candidates through various development stages. For example, ThermoDox® is being evaluated in a Phase II clinical trial for recurrent chest wall breast cancer and other preclinical studies, and we expect to launch the OPTIMA study in the first half of 2014. We will continue to conduct additional analyses of the data from the HEAT study to assess the future strategic value of ThermoDox® and are performing sub-group analysis of the Chinese cohort of patients in the HEAT study and other activities for further development of ThermoDox® for mainland China, Hong Kong and Macau. To complete the development and commercialization of our product candidates, we will need to raise substantial amounts of additional capital to fund our operations. Our future capital requirements will depend upon numerous unpredictable factors, including, without limitation, the cost, timing, progress and outcomes of clinical studies and regulatory reviews of our proprietary drug candidates, our efforts to implement new collaborations, licenses and strategic transactions, general and administrative expenses, capital expenditures and other unforeseen uses of cash. We do not have any committed sources of financing and cannot assure you that alternate funding will be available in a timely manner, on acceptable terms or at all. We may need to pursue dilutive equity financings, such as the issuance of shares of common stock, convertible debt or other convertible or exercisable securities. Such dilutive equity financings could dilute the percentage ownership of our current common stockholders and could significantly lower the market value of our common stock. In addition, a financing could result in the issuance of new securities that may have rights, preferences or privileges senior to those of our existing stockholders.

If we are unable to obtain additional capital on a timely basis or on acceptable terms, we may be required to delay, reduce or terminate our research and development programs and preclinical studies or clinical trials, if any, limit strategic opportunities or undergo corporate restructuring activities. We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights to some of our technologies, product candidates or potential markets or that could impose onerous financial or other terms. Furthermore, if we cannot fund our ongoing development and other operating requirements, particularly those associated with our obligations to conduct clinical trials under our licensing agreements, we will be in breach of these licensing agreements and could therefore lose our license rights, which could have material adverse effects on our business.

**We may not successfully engage in strategic transactions, which could adversely affect our ability to develop and commercialize product candidates, impact our cash position, increase our expense and present significant distractions to our management.**

We may consider strategic alternatives intended to further the development of our business, which may include acquiring businesses, technologies or products, out- or in-licensing product candidates or technologies or entering into a business combination with another company. Any strategic transaction may require us to incur non-recurring or other charges, increase our near- and long-term expenditures and pose significant integration or implementation challenges or disrupt our management or business. These transactions would entail numerous operational and financial risks, including exposure to unknown liabilities, disruption of our business and diversion of our management's time and attention in order to manage a collaboration or develop acquired products, product candidates or technologies, incurrence of substantial debt or dilutive issuances of equity securities to pay transaction consideration or costs, higher than expected collaboration, acquisition or integration costs, write-downs of assets or goodwill or impairment charges, increased amortization expenses, difficulty and cost in facilitating the collaboration or combining the operations and personnel of any acquired business, impairment of relationships with key suppliers, manufacturers or customers of any acquired business due to changes in management and ownership and the inability to retain key employees of any acquired business. Accordingly, although there can be no assurance that we will undertake or successfully complete any transactions of the nature described above, any transactions that we do complete may be subject to the foregoing or other risks and have a material adverse effect on our business, results of operations, financial condition and prospects. Conversely, any failure to enter any strategic transaction that would be beneficial to us could delay the development and potential commercialization of our product candidates and have a negative impact on the competitiveness of any product candidate that reaches market.

**Our business depends on license agreements with third parties to permit us to use patented technologies. The loss of any of our rights under these agreements could impair our ability to develop and market our products.**

Our success will depend, in a substantial part, on our ability to maintain our rights under license agreements granting us rights to use patented technologies. We have entered into license agreements with Duke University, under which we have exclusive rights to commercialize medical treatment products and procedures based on Duke's thermo-sensitive liposome technology. The Duke University license agreement contains a license fee, royalty and/or research support provisions, testing and regulatory milestones, and other performance requirements that we must meet

by certain deadlines. Additionally, we have a joint research agreement with Philips Healthcare, a division of Royal Philips Electronics, to evaluate the combination of Philips' high intensity focused ultrasound (HIFU) with ThermoDox® to determine the potential of this combination to treat a broad range of cancers. If we breach any provisions of the license and research agreements, we may our ability to use the subject technology, as well as compensation for our efforts in developing or exploiting the technology. Any such loss of rights and access to technology could have a material adverse effect on our business.

Further, we cannot guarantee that any patent or other technology rights licensed to us by others will not be challenged or circumvented successfully by third parties, or that the rights granted will provide adequate protection. We may be required to alter any of our potential products or processes, or enter into a license and pay licensing fees to a third party or cease certain activities. There can be no assurance that we can obtain a license to any technology that we determine we need on reasonable terms, if at all, or that we could develop or otherwise obtain alternate technology. If a license is not available on commercially reasonable terms or at all, our business, results of operations, and financial condition could be significantly harmed and we may be prevented from developing and commercializing the product. Litigation, which could result in substantial costs, may also be necessary to enforce any patents issued to or licensed by us or to determine the scope and validity of others' claimed proprietary rights.

**We rely on trade secret protection and other unpatented proprietary rights for important proprietary technologies, and any loss of such rights could harm our business, results of operations and financial condition.**

We rely on trade secrets and confidential information that we seek to protect, in part, by confidentiality agreements with our corporate partners, collaborators, employees and consultants. We cannot assure you that these agreements are adequate to protect our trade secrets and confidential information or will not be breached or, if breached, we will have adequate remedies. Furthermore, others may independently develop substantially equivalent confidential and proprietary information or otherwise gain access to our trade secrets or disclose such technology. Any loss of trade secret protection or other unpatented proprietary rights could harm our business, results of operations and financial condition.

**Our products may infringe patent rights of others, which may require costly litigation and, if we are not successful, could cause us to pay substantial damages or limit our ability to commercialize our products.**

Our commercial success depends on our ability to operate without infringing the patents and other proprietary rights of third parties. There may be third party patents that relate to our products and technology. We may unintentionally infringe upon valid patent rights of third parties. Although we currently are not involved in any material litigation involving patents, a third party patent holder may assert a claim of patent infringement against us in the future. Alternatively, we may initiate litigation against the third party patent holder to request that a court declare that we are not infringing the third party's patent and/or that the third party's patent is invalid or unenforceable. If a claim of infringement is asserted against us and is successful, and therefore we are found to infringe, we could be required to pay damages for infringement, including treble damages if it is determined that we knew or became aware of such a patent and we failed to exercise due care in determining whether or not we infringed the patent. If we have supplied infringing products to third parties or have licensed third parties to manufacture, use or market infringing products, we may be obligated to indemnify these third parties for damages they may be required to pay to the patent holder and for any losses they may sustain. We can also be prevented from selling or commercializing any of our products that use the infringing technology in the future, unless we obtain a license from such third party. A license may not be available from such third party on commercially reasonable terms, or may not be available at all. Any modification to include a non-infringing technology may not be possible or if possible may be difficult or time-consuming to develop, and require revalidation, which could delay our ability to commercialize our products. Any infringement action asserted against us, even if we are ultimately successful in defending against such action, would likely delay the regulatory approval process of our products, harm our competitive position, be expensive and require the time and attention of our key management and technical personnel.

**We rely on third parties to conduct all of our clinical trials. If these third parties are unable to carry out their contractual duties in a manner that is consistent with our expectations, comply with budgets and other financial obligations or meet expected deadlines, we may not receive certain development milestone payments or be able to obtain regulatory approval for or commercialize our product candidates in a timely or cost-effective manner.**

We rely, and expect to continue to rely, on third-party clinical investigators, clinical research organizations (CROs), clinical data management organizations and consultants to design, conduct, supervise and monitor our clinical trials. Because we do not have the ability to conduct our own clinical trials, we must rely on the efforts of others and have limited control over, and cannot predict accurately, the timing of such trials, the costs associated with such trials or the procedures that are followed for such trials. We do not expect to significantly increase our personnel in the foreseeable future and may continue to rely on third parties to conduct all of our future clinical trials. If we cannot contract with acceptable third parties on commercially reasonable terms or at all, if these third parties are unable to carry out their contractual duties or obligations in a manner that is consistent with our expectations or meet expected deadlines, if they do not carry out the trials in accordance with budgeted amounts, if the quality or accuracy of the clinical data they obtain is compromised due to their failure to adhere to our clinical protocols or for other reasons, or if they fail to maintain compliance with applicable government regulations and standards, our clinical trials may be extended, delayed or terminated or may become significantly more expensive, we may not receive development milestone payments when expected or at all, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates.

