CORTEX PHARMACEUTICALS INC/DE/
Form S-1/A
September 07, 2011
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**As filed with the Securities and Exchange Commission on September 7, 2011**

**Registration No. 333-171788**

# UNITED STATES

# SECURITIES AND EXCHANGE COMMISSION

**Washington, D.C. 20549**

# AMENDMENT NO. 1

# TO

# FORM S-1

# REGISTRATION STATEMENT

***UNDER***

***THE SECURITIES ACT OF 1933***

# CORTEX PHARMACEUTICALS, INC.

**(Exact name of registrant as specified in its charter)**

| Delaware | 2834 | 33-0303583 |
|---|---|---|
| (State or other jurisdiction of incorporation or organization) | (Primary Standard Industrial Classification Code Number) | (I.R.S. Employer Identification No.) |

**15241 Barranca Parkway**

**Irvine, California 92618**

**(949) 727-3157**

**(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)**

**Mark A. Varney, Ph.D.**

**President and Chief Executive Officer**

**Cortex Pharmaceuticals, Inc.**

**15241 Barranca Parkway**

**Irvine, California 92618**

**(949) 727-3157**

**(Name, address, including zip code, and telephone number, including area code, of agent for service)**

***Copies to:***

**Lawrence B. Cohn**

**Marc G. Alcser**

**Stradling Yocca Carlson & Rauth**

**660 Newport Center Drive, Suite 1600**

**Newport Beach, California 92660**

**(949) 725-4000**

**Approximate date of commencement of proposed sale to the public:** As soon as practicable after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ¨

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

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

**THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(A) OF THE SECURITIES ACT OF 1933 OR UNTIL THE REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE SECURITIES AND EXCHANGE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(A), MAY DETERMINE.**

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**The information in this prospectus is not complete and may be subject to change. We may not sell these securities until the registration statement is filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any state where the offer or sale is not permitted.**

**Subject to Completion, Dated September 7, 2011**

**Prospectus**

# Cortex Pharmaceuticals, Inc.

**15,000,000 Units**

**Each Consisting of**

**One Share of Common Stock**

**and**

**A Warrant to Purchase One Share of Common Stock**

We are offering up to 15,000,000 units, each unit consisting of one share of our common stock and a warrant to purchase one share of our common stock. Subject to certain ownership limitations, each warrant entitles the holder to purchase one share of our common stock at an exercise price of $ per share. The units will not be issued or certificated. The units will separate immediately and the common stock and warrants will be issued separately and will trade separately. We are not required to sell any specific dollar amount or number of units, but will use our best efforts to sell all of the units being offered. This prospectus also relates to the warrants issuable to the placement agent as described below and to the shares of our common stock issuable upon the exercise of those warrants.

You should read this prospectus and any prospectus supplement carefully before you invest. This prospectus contains information you should consider when making your investment decision.

Our common stock is quoted on the OTC Bulletin Board under the symbol CORX.OB . On September 6, 2011, the last reported closing sale price of our common stock was $0.11 per share. We do not intend to apply for listing the warrants on any securities exchange.

**Investing in our securities involves a high degree of risk. See Risk Factors beginning on page 4 of this prospectus for certain risks you should consider before purchasing any securities.**

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

Rodman & Renshaw, LLC has agreed to act as our exclusive placement agent in connection with this offering. In addition, the placement agent may engage one or more sub placement agents or selected dealers. The placement agent is not purchasing the securities offered by us, and is not required to sell any specific number or dollar amount of units, but will assist us in this offering on a reasonable best efforts basis. We have agreed to pay the placement agent a cash fee equal to 6% of the gross proceeds of the offering of units. In addition, we have agreed to issue to the placement agent, or its designees, warrants exercisable for a number of shares equal to 6% of the aggregate number of shares, other than shares underlying warrants, included in the units issued in this offering. We estimate the total expenses of this offering, excluding the placement agent fees, will be approximately $120,000. Because there is no minimum offering amount required as a condition to closing in this offering, the actual public offering amount, placement agent fees, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above. See Plan of Distribution beginning on page 60 of this prospectus for more information on this offering and the placement agent arrangements.

| | Per Unit | Maximum Offering Amount |
|---|---|---|
| Public offering price | $ | $ 1,500,000 |
| Placement Agent fees | $ | $ 90,000 |
| Proceeds, before expenses, to us | $ | $ 1,410,000 |

The closing of this offering is subject to certain conditions. We expect that delivery of the units being offered pursuant to this prospectus will be made to purchasers on or about , 2011, against payment in immediately available funds.

**The date of this prospectus is , 2011.**

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This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission. You should only rely on the information in this prospectus or to which we have referred you. Neither the Company nor the placement agent has authorized anyone to provide you with information or to make any representation on behalf of Cortex Pharmaceuticals, Inc. that is different from that contained in this prospectus. You should not rely on any unauthorized information or representation. This prospectus is an offer to sell only the securities offered by this prospectus under the circumstances and in jurisdictions where it is lawful to do so. The information in this prospectus is accurate only as of the date of this prospectus, regardless of the date of delivery of this prospectus or of any sales of these securities. Our business, financial condition, results of operations and prospects may have changed since the date of this prospectus. This prospectus may be used only in jurisdictions were it is legal to sell these securities. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States. We are not making any representation to you regarding the legality of an investment in the securities offered hereby under applicable law. You should consult with your own legal advisors as to the legal, tax, business, financial and related aspect of a purchase of such securities.

**Industry and Market Data**

Unless otherwise indicated, the market data and certain other statistical information used throughout this prospectus are based on independent industry publications, government publications, reports by market research firms or other published independent sources. Although we believe these third-party sources are reliable, we have not independently verified the information. None of the sources cited in this prospectus has consented to the inclusion of any data from its reports, nor have we sought their consent. In addition, some data are based on our good faith estimates. Such estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as our own management s experience in the industry, and are based on assumptions made by us based on such data and our knowledge of such industry and markets, which we believe to be reasonable. However, none of our estimates have been verified by any independent source. Our estimates and assumptions involve risks and uncertainties and are subject to change based on various factors, including those discussed in the Risk Factors section of this prospectus and the other information contained herein. These and other factors could cause our actual results to differ materially from those expressed in the estimates and assumptions.

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## PROSPECTUS SUMMARY

### About This Prospectus

*This summary highlights the information contained elsewhere in this prospectus. Because this is only a summary, it does not contain all of the information you should consider before buying the securities of the Company. You should read the entire prospectus carefully, especially the sections entitled Caution Regarding Forward Looking Statements, Risk Factors and Management s Discussion and Analysis of Financial Condition and Results of Operations, together with our financial statements and the related notes thereto included elsewhere in this prospectus, before deciding to purchase any securities of the Company.*

Unless we state otherwise or the context indicates otherwise, references to Cortex, Company, we, us and our in this prospectus refer to Corte Pharmaceuticals, Inc.

### About Cortex Pharmaceuticals

We are engaged in the discovery and development of innovative pharmaceuticals for the treatment of psychiatric disorders and neurological diseases. Our primary focus is to develop novel small molecule compounds that positively modulate AMPA-type glutamate receptors, a complex of proteins involved in the communication between nerve cells in the mammalian brain. These compounds, termed AMPAKINE® compounds, enhance the activity of the AMPA receptor. These molecules are designed and developed as proprietary pharmaceuticals because we believe they hold promise for the treatment of neurological and psychiatric diseases and disorders that are known, or thought, to involve depressed functioning of pathways in the brain that use glutamate as a neurotransmitter. Our most advanced clinical compounds are CX717 and CX1739, both of which are in Phase II clinical development.

The AMPAKINE platform addresses large potential markets. According to research data from IMS Health, in 2008 worldwide sales for central nervous system products to treat brain-related disorders and diseases exceeded $112 billion. Our business plan involves partnering with larger pharmaceutical companies for research, development, clinical testing, manufacturing and global marketing of specific AMPAKINE compounds for those indications that require sizable, expensive Phase III clinical trials and very large sales forces to achieve significant market penetration. Diseases such as Alzheimer s disease, mild cognitive impairment, or MCI, Attention Deficit Hyperactivity Disorder, or ADHD, schizophrenia, depression, respiratory depression caused by opiate analgesics, and sleep apnea may benefit from treatment with AMPAKINE drugs and require a large market presence.

At the same time, we plan to develop compounds internally for a selected set of indications, some of which will allow us to apply for Orphan Drug status. Such designation by the Food and Drug Administration, or the FDA, is usually applied to products where the number of patients in the United States, or the U.S., in the given disease category is typically less than 200,000. The European Medicines Agency adopted a similar system termed The Regulation of Orphan Medicinal Products. These Orphan Drug indications typically require more modest investment in the development stages, follow a quicker regulatory path to approval, and involve a more concentrated and smaller sales force targeted at selected medical centers in the U.S. and Europe. Such Orphan Drug indications that we plan to pursue internally may include Huntington s disease, Fragile X syndrome and Rett s syndrome. If we are successful in the pursuit of this operating strategy, we may be in a position to contain our costs over the next few years, to maintain our focus on the research and early development of novel pharmaceuticals (where we believe that we have the ability to compete) and eventually to participate more fully in the commercial development of AMPAKINE products in the United States.

For a more complete description of our business, please see Business, beginning on page 27.

An investment in the securities of the Company is speculative and involves substantial risks. You should read the Risk Factors section of this prospectus for a discussion of certain factors to consider carefully before deciding to invest in the securities of the Company.

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**Corporate Information**

Our principal executive offices are located at 15241 Barranca Parkway, Irvine, California 92618, and our telephone number is (949) 727-3157. Our website is http://www.cortexpharm.com.

The contents of our website are not incorporated by reference into this prospectus.

## SUMMARY OF THE OFFERING

| | |
|---|---|
| Securities Offered: | Up to 15,000,000 units. Each unit will consist of one share of our common stock and a warrant to purchase up to one share of our common stock. |
| Description of Warrants: | The warrants will be exercisable at any time after the date of issuance and ending on the fifth anniversary of the issuance date at an exercise price of $ per share. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants. |
| Common stock outstanding prior to this offering: | 78,858,197 shares. |
| Common stock to be outstanding after this offering: | 93,858,197 shares. |
| Use of proceeds: | The net proceeds from this offering will be added to our working capital and used to accelerate the development of our AMPAKINE technology, licensing activities, working capital, capital expenditures and other general corporate purposes. Please see Use of Proceeds on page 11. |
| Risk Factors: | An investment in our securities is speculative and involves substantial risks. You should read the Risk Factors section of this prospectus beginning on page 4 to consider carefully before deciding to invest in our securities. |
| OTC Bulletin Board Symbol: | CORX.OB |

The number of shares of our common stock that will be outstanding immediately after the offering is based on 78,858,197 shares outstanding as of June 30, 2011. Unless we specifically state otherwise, the share information in this prospectus excludes:

- 11,506,756 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering under our equity incentive plans, at a weighted average exercise price of $1.31 per share;

- 3,571,636 shares of common stock available for future grants under our equity incentive plans;

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350,000 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering granted outside of our equity incentive plans, at a weighted average exercise price of $2.59 per share;

3,679 shares of common stock issuable upon the conversion of outstanding Series B convertible preferred stock, at a conversion price of $6.795 per share;

24,126,952 shares of common stock issuable upon the exercise of warrants outstanding prior to this offering, at a weighted average exercise price of $0.74 per share;

15,000,000 shares of common stock issuable upon the exercise of warrants to be issued to purchasers in this offering, at an exercise price of $ per share; and

900,000 shares of common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering, at an exercise price of $ per share.

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## RISK FACTORS

*Your investment in our securities involves a high degree of risk. You should consider the risks described below and the other information contained in this prospectus carefully before deciding to invest in our securities. If any of the following risks actually occur, our business, financial condition, cash flow and operating results could be harmed. As a result, the trading price of our common stock and the value of the securities offered could decline, and you could lose a part or all of your investment.*

### Risks Related To Our Business

***Our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern.***

In its audit opinion issued in connection with our balance sheets as of December 31, 2010 and 2009 and our statements of operations, stockholder s equity (deficit) and comprehensive loss (income), and cash flows for the years ended December 31, 2010 and 2009, our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern given our limited working capital, recurring net losses and negative cash flows from operations. The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts of liabilities that might be necessary should we be unable to continue in existence. While we have relied principally in the past on external financing to provide liquidity and capital resources for our operations, we can provide no assurance that cash generated from our operations together with cash received in the future from external financing will be sufficient to enable us to continue as a going concern.

***We have a history of net losses; we expect to continue to incur net losses and we may never achieve or maintain profitability.***

Since our formation on February 10, 1987 through the end of our most recent fiscal quarter ended June 30, 2011, we have generated only modest operating revenues and we have incurred net losses approximating $116,048,000. For the six months ended June 30, 2011, our net loss was approximately $1,912,000. For the fiscal year ended December 31, 2010, our net income was approximately $1,629,000, due primarily to revenues from our March 2010 sale of select Ampakine assets to Biovail. For the fiscal year ended December 31, 2009, our net loss was approximately $8,441,000. As of June 30, 2011, we had an accumulated deficit of approximately $120,426,000. We have not generated any revenue from product sales to date, and it is possible that we will never generate revenues from product sales in the future. Even if we do achieve significant revenues from product sales, we expect to incur significant operating losses over the next several years. As with other companies in the biotechnology industry, it is possible that we will never achieve profitable operations.

***We will need additional capital in the future and, if such capital is not available on terms acceptable to us or available to us at all, we may need to scale back our research and development efforts and may be unable to continue our business operations.***

We will require substantial additional funds to advance our research and development programs and to continue our operations, particularly if we decide to independently conduct later-stage clinical testing and apply for regulatory approval of any of our proposed products, and if we decide to independently undertake the marketing and promotion of our products. Additionally, we may require additional funds in the event that we decide to pursue strategic acquisitions of or licenses for other products or businesses. Based on our current operating plan, including planned clinical trials and other product research and development costs, we estimate that our existing cash resources will be sufficient to meet our requirements into the fourth quarter of 2011. We believe that we will require additional capital to fund on-going operations beyond that time. Additional funds may result from agreements with larger pharmaceutical companies that include the license or rights to the technologies and products that we are developing, although there is no assurance that we will secure a transaction in a timely manner, or at all. We may receive another $2,000,000 under our amended and restated agreement with Les Laboratoires Servier, or Servier, if Servier elects to exercise its option on or before October 31, 2011, but there is no assurance that we will receive

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such payment. Additional funds also may result from the exercise of warrants to purchase shares of our common stock. As of June 30, 2011, warrants to purchase up to approximately 24.1 million shares of our common stock were outstanding at exercise prices ranging from $0.21 to $3.96 per share. If these warrants are fully exercised, of which there can be no assurance, such exercise would provide approximately $17,800,000 of additional capital.

Our cash requirements in the future may differ significantly from our current estimates, depending on a number of factors, including:

- the results of our clinical trials;
- the time and costs involved in obtaining regulatory approvals;
- the costs of setting up and operating our own marketing and sales organization;
- the ability to obtain funding under contractual and licensing agreements;
- the costs involved in obtaining and enforcing patents or any litigation by third parties regarding intellectual property; and
- our success in entering into collaborative relationships with other parties.

To finance our future activities, we may seek funds through additional rounds of financing, including private or public equity or debt offerings and collaborative arrangements with corporate partners. We cannot say with any certainty that we will be able to obtain the additional needed funds on reasonable terms, or at all. The sale of additional equity or convertible debt securities could result in additional dilution to our stockholders. If we issued preferred equity or debt securities, these securities could have rights superior to holders of our common stock, and such instruments entered into in connection with the issuance of securities could contain covenants that will restrict our operations. We might have to obtain funds through arrangements with collaborative partners or others that may require us to relinquish rights to our technologies, product candidates or products that we otherwise would not relinquish. As previously announced, in early March 2009, we reduced our workforce in an effort to conserve our capital resources. In August 2011, we reduced our workforce from eleven to six full-time employees. If adequate funds are not available in the future, as required, we could lose our key employees and might have to further delay, scale back or eliminate one or more of our research and development programs, which would impair our future prospects. In addition, we may be unable to meet our research spending obligations under our existing licensing agreements and may be unable to continue our business operations.

***Our products rely on licenses from research institutions and if we lose access to these technologies or applications, our business would be substantially impaired.***

Under our agreements with The Regents of the University of California, we have exclusive rights to AMPAKINE compounds for all applications for which the University has patent rights, other than endocrine modulation.

In connection with our March 2010 transaction with Biovail Laboratories SRL, or Biovail, we consented to The Regents of the University of California providing Biovail a non-exclusive license to the University s patent rights for AMPAKINE compounds for use in the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. As part of our agreement to reacquire our assets and rights from Biovail in March 2011, the non-exclusive license of these rights to Biovail was terminated and the related rights were returned to us.

Under a patent license agreement with The Governors of the University of Alberta, we had exclusive rights to the use of AMPAKINE compounds to prevent and treat respiratory depression induced by opiate analgesics, barbiturates and anesthetic and sedative agents. In connection with our transaction with Biovail, we assigned our rights under our patent license agreement with the University of Alberta to Biovail. However, we retained our ability to continue to pursue AMPAKINE compounds as a potential treatment for sleep apnea disorders. As part of our

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agreement to reacquire our assets from Biovail in March 2011, the rights assigned to Biovail under our patent license agreement with the University of Alberta were returned to us.

Our rights to certain of the AMPAKINE compounds are secured by patents or patent applications owned wholly by The Regents of the University of California or by the University as a co-owner with us. Our existing agreements with The Regents of the University of California require the University to prepare, file, prosecute and maintain patent applications related to our licensed rights at our expense. Such agreements also require us to make certain minimum annual payments, meet certain milestones or diligently seek to commercialize the underlying technology.

Under such agreements, we are required to make minimum annual royalty payments of approximately $70,000. Separately, we are required to spend a minimum of $250,000 per year to advance the AMPAKINE compounds until we begin marketing an AMPAKINE compound. The commercialization efforts in the agreements require us to file for regulatory approval of an AMPAKINE compound before October 2015.

Although we currently are in compliance with our obligations under the agreements with The Regents of the University of California, including minimum annual payments and diligence milestones, our failure to meet any of these requirements could allow the University to terminate that particular agreement. Management believes that it maintains a strong relationship with The Regents of the University of California.

***We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies.***

The development of AMPAKINE products is subject to the risks of failure commonly experienced in the development of products based upon innovative technologies and the expense and difficulty of obtaining approvals from regulatory agencies. Drug discovery and development is time consuming, expensive and unpredictable. On average, only one out of many thousands of chemical compounds discovered by researchers proves to be both medically effective and safe enough to become an approved medicine. In the fields that we target, approximately one in ten compounds placed in clinical trials generally reaches the market. All of our proposed products are in the preclinical or early clinical stage of development and will require significant additional funding for research, development and clinical testing before we are able to submit them to any of the regulatory agencies for clearances for commercial use. Our trials that are subject to our collaborative research arrangements are being funded by third parties and do not involve financial commitments from us.

The process from discovery to development to regulatory approval can take several years and drug candidates can fail at any stage of the process. Late stage clinical trials often fail to replicate results achieved in earlier studies. Historically, in our industry more than half of all compounds in development failed during Phase II trials and 30% failed during Phase III trials. We cannot assure you that we will be able to complete successfully any of our research and development activities. Even if we do complete them, we may not be able to market successfully any of the products or be able to obtain the necessary regulatory approvals or assure that healthcare providers and payors will accept our products. We also face the risk that any or all of our products will not work as intended or that they will be unsafe, or that, even if they do work and are safe, that our products will be uneconomical to manufacture and market on a large scale. Due to the extended testing and regulatory review process required before we can obtain marketing clearance, we do not expect to be able to commercialize any therapeutic drug for several years, either directly or through our corporate partners or licensees.

***We may not be able to enter into the strategic alliances necessary to fully develop and commercialize our products and technologies, and we will be dependent on our corporate partners if we do.***

In addition to our agreement with Servier, we are seeking other pharmaceutical company partners to develop other major indications for the AMPAKINE compounds. These agreements would potentially provide us with additional funds in exchange for exclusive or non-exclusive license or other rights to the technologies and products that we are currently developing. Competition between biopharmaceutical companies for these types of arrangements is intense. Although we have been engaged in discussions with candidate companies for some time, we cannot give any assurance that these discussions will result in an agreement or agreements in a timely manner, or

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at all. Additionally, we cannot assure you that any resulting agreement will generate sufficient revenues to offset our operating expenses and longer-term funding requirements.

**Risks Related to Our Industry**

***If we fail to secure adequate intellectual property protection, it could significantly harm our financial results and ability to compete.***

Our success will depend, in part, on our ability to get patent protection for our products and processes in the U.S. and elsewhere. We have filed and intend to continue to file patent applications as we need them. However, additional patents that may issue from any of these applications may not be sufficiently broad to protect our technology. Also, any patents issued to us or licensed by us may be designed around or challenged by others, and if such challenge is successful, it may diminish our rights.

If we are unable to obtain sufficient protection of our proprietary rights in our products or processes prior to or after obtaining regulatory clearances, our competitors may be able to obtain regulatory clearance and market competing products by demonstrating the equivalency of their products to our products. If they are successful at demonstrating the equivalency between the products, our competitors would not have to conduct the same lengthy clinical tests that we have conducted.

We also rely on trade secrets and confidential information that we try to protect by entering into confidentiality agreements with other parties. Those confidentiality agreements may be breached, and our remedies may be insufficient to protect the confidential information. Further, our competitors may independently learn our trade secrets or develop similar or superior technologies. To the extent that our consultants, key employees or others apply technological information independently developed by them or by others to our projects, disputes may arise regarding the proprietary rights to such information. We cannot assure you that such disputes will be resolved in our favor.

***We may be subject to potential product liability claims. One or more successful claims brought against us could materially impact our business and financial condition.***

The clinical testing, manufacturing and marketing of our products may expose us to product liability claims. We maintain liability insurance with coverage limits of $10 million per occurrence and $10 million in the annual aggregate. We have never been subject to a product liability claim, and we require each patient in our clinical trials to sign an informed consent agreement that describes the risks related to the trials, but we cannot assure you that the coverage limits of our insurance policies will be adequate or that one or more successful claims brought against us would not have a material adverse effect on our business, financial condition and result of operations. Further, if one of our AMPAKINE compounds is approved by the FDA for marketing, we cannot assure you that adequate product liability insurance will be available, or if available, that it will be available at a reasonable cost. Any adverse outcome resulting from a product liability claim could have a material adverse effect on our business, financial condition and results of operations.

***We face intense competition that could result in products that are superior to the products that we are developing.***

Our business is characterized by intensive research efforts. Our competitors include many companies, research institutes and universities that are working in a number of pharmaceutical or biotechnology disciplines to develop therapeutic products similar to those we are currently investigating. For example, the Pharmaceutical Research and Manufacturers of America recently estimated that more than 100 pharmaceutical and biotechnology companies are conducting research in the field of neurological disorders, with over 25 drugs under clinical investigation in the U.S. for the treatment of Alzheimer s disease. Virtually all of the major multinational pharmaceutical companies have active projects in these areas. Most of these competitors have substantially greater financial, technical, manufacturing, marketing, distribution and/or other resources than we do. In addition, many of our competitors have experience in performing human clinical trials of new or improved therapeutic products and obtaining approvals from the FDA and other regulatory agencies. We have no experience in conducting and managing later-stage clinical testing or in preparing applications necessary to obtain regulatory approvals.

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Accordingly, it is possible that our competitors may succeed in developing products that are safer or more effective than those that we are developing and may obtain FDA approvals for their products faster than we can. We expect that competition in this field will continue to intensify.

***We may be unable to recruit and retain our senior management and other key technical personnel on whom we are dependent.***

We are highly dependent upon senior management and key technical personnel and currently do not carry any insurance policies on such persons. In particular, we are highly dependent on our Executive Chairman, Roger G. Stoll, Ph.D.; our President and Chief Executive Officer, Mark A. Varney, Ph.D.; and our Vice President of Preclinical Development, Steven A. Johnson, Ph.D. all of whom have entered into employment agreements with us. Competition for qualified employees among pharmaceutical and biotechnology companies is intense. The loss of any of our senior management, or our inability to attract, retain and motivate the additional highly-skilled employees and consultants that our business requires, could substantially hurt our business and prospects.

***The regulatory approval process is expensive, time consuming, uncertain and may prevent us from obtaining required approvals for the commercialization of some of our products.***

The FDA and other similar agencies in foreign countries have substantial requirements for therapeutic products. Such requirements often involve lengthy and detailed laboratory, clinical and post-clinical testing procedures and are expensive to complete. It often takes companies many years to satisfy these requirements, depending on the complexity and novelty of the product. The review process is also extensive, which may delay the approval process even more. According to the Pharmaceutical Research and Manufacturers of America, historically the cost of developing a new pharmaceutical from discovery to approval was approximately $800 million, and this amount is expected to increase annually.

As of yet, we have not obtained any approvals to market our products. Further, we cannot assure you that the FDA or other regulatory agency will grant us approval for any of our products on a timely basis, if at all. Even if regulatory clearances are obtained, a marketed product is subject to continual review, and later discovery of previously unknown problems may result in restrictions on marketing or withdrawal of the product from the market.

**Risks Related To Our Securities**

***Our stock price may be volatile and our common stock could decline in value.***

Our common stock is currently quoted on the OTC Bulletin Board and is not actively traded, which may increase price quotation volatility and could limit the liquidity of the common stock, all of which may adversely affect the market price of the common stock and our ability to raise additional capital.

The market price of securities of life sciences companies in general has been very unpredictable. The range of sales prices of our common stock for the fiscal years ended December 31, 2010 and 2009, as quoted on the Over the Counter Bulletin Board and NYSE Amex (formerly The American Stock Exchange), was $0.09 to $0.25 and $0.07 to $0.63, respectively. The following factors, in addition to factors that affect that market generally, could significantly impact our business, and the market price of our common stock could decline:

- competitors announcing technological innovations or new commercial products;
- competitors publicity regarding actual or potential products under development;
- regulatory developments in the U.S. and foreign countries;
- developments concerning proprietary rights, including patent litigation;

public concern over the safety of therapeutic products; and

changes in healthcare reimbursement policies and healthcare regulations.

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***You may experience dilution of your ownership interests because of the future issuance of additional shares of our common stock.***

As of August 31, 2011, we had approximately 78.9 million shares of our common stock outstanding.

If all warrants and options outstanding as of June 30, 2011 are exercised prior to their expiration, up to approximately 36 million additional shares of our common stock could become freely tradable. Sales of substantial amounts of common stock in the public market, or the perception that such sales could occur, could adversely affect the prevailing market price of our common stock and could also make it more difficult for us to raise funds through future offerings of common stock.

***Our charter document and shareholder rights plan may prevent or delay an attempt by our stockholders to replace or remove management.***

Certain provisions of our second restated certificate of incorporation could make it more difficult for a third party to acquire control of us, even if such change in control would be beneficial to our stockholders. Our second restated certificate of incorporation allows our Board of Directors, referred to as the Board or Board of Directors, to issue up to 3,507,500 shares of preferred stock without stockholder approval. Pursuant to this authority, in February 2002 our Board of Directors adopted a shareholder rights plan and declared a dividend of a right to purchase one one-thousandth of a share of preferred stock for each outstanding share of our common stock. The ability of our Board of Directors to issue additional preferred stock and our shareholder rights plan may have the effect of delaying or preventing an attempt by our stockholders to replace or remove existing directors and management.

***Applicable SEC rules governing the trading of penny stocks limits the trading and liquidity of our common stock which may affect the trading price of our common stock.***

Our common stock is currently quoted on the OTC Bulletin Board, and trades below $5.00 per share; therefore, the common stock is considered a penny stock and subject to SEC rules and regulations which impose limitations upon the manner in which such shares may be publicly traded. These regulations require the delivery, before any transaction involving a penny stock, of a disclosure explaining the penny stock market and the associated risks. Under these regulations, certain brokers who recommend such securities to persons other than established customers or certain accredited investors must make a special written suitability determination regarding such purchaser and receive such purchaser s written agreement of a transaction before a sale. In addition, margin regulations prevent low-priced stocks such as ours from being used as collateral for brokers margin loans to investors. These regulations have the effect of limiting the trading activity of our common stock and reducing the liquidity of an investment in our common stock.

***We do not expect any cash dividends to be paid on our common stock in the foreseeable future.***

We have never declared or paid a cash dividend on our common stock, and we do not anticipate such a declaration or payment for the foreseeable future. We expect to use future earnings, if any, to fund business growth. Consequently, stockholders only opportunity to achieve a return on your investment is if the price of our common stock appreciates and they sell their shares at a profit. We cannot assure stockholders of a positive return on their investment when they sell their shares, nor can we assure that stockholders will not lose the entire amount of their investment.

**Risks Related To This Offering**

***Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways in which you disagree.***

We have not allocated specific amounts of the net proceeds from this offering for any specific purpose. Accordingly, our management will have significant flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used

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appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

***You will experience immediate and substantial dilution as a result of this offering.***

You will incur immediate and substantial dilution as a result of this offering. After giving effect to the sale by us of up to 15,000,000 units offered in this offering at an assumed offering price of $ per unit, and after deducting the placement agent fees and estimated offering expenses payable by us, purchasers in this offering can expect an immediate dilution of $ per share, or %, at the assumed public offering price, assuming no exercise of the warrants. Purchasers exercising their warrants may experience additional dilution. See Dilution on page 14 for a more detailed discussion of the dilution you will incur in this offering.

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

There is no established public trading market for the warrants being offered by this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing the warrants on any securities exchange. Without an active market, the liquidity of the warrants will be limited.

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## CAUTION REGARDING FORWARD-LOOKING STATEMENTS

Some of the statements contained or incorporated by reference in this prospectus are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, and we intend that such forward-looking statements be subject to the safe harbors created thereby. These statements are based on the current expectations, forecasts, and assumptions of our management and are subject to various risks and uncertainties that could cause our actual results to differ materially from those expressed or implied by the forward-looking statements. Forward-looking statements are sometimes identified by language such as believes, anticipates, estimates, expects, plans, intends, projects, future and similar expressions and may also include references to plans, strategies, objectives, anticipated future performance as well as other statements that are not strictly historical in nature. The risks, uncertainties, and other factors that could cause our actual results to differ materially from those expressed or implied in this prospectus include, but are not limited to, those noted under the caption Risk Factors beginning on page 4 of this prospectus. Readers should carefully review this information as well the risks and other uncertainties described in other filings we may make after the date of this prospectus with the Securities and Exchange Commission.

Readers are cautioned not to place undue reliance on forward-looking statements. They reflect opinions, assumptions, and estimates only as of the date they were made, and we undertake no obligation to publicly update or revise any forward-looking statements in this prospectus, whether as a result of new information, future events or circumstances, or otherwise.

## USE OF PROCEEDS

We estimate that the net proceeds of this offering, after deducting placements agent fees and our estimated offering expenses, and excluding the proceeds, if any, from the exercise of the warrants issued in this offering, will be approximately $1,290,000 if we sell the maximum number of units.

We currently intend to use the net proceeds from this offering for working capital and for general corporate purposes, which may include, among other things, funding development of our AMPAKINE technology, licensing activities and capital expenditures.

We cannot estimate precisely the allocation of the net proceeds from this offering among these uses. The amounts and timing of the expenditures may vary significantly, depending on numerous factors, including the progress of our clinical trials and other development efforts as well as the amount of cash used in our operations. Accordingly, our management will have broad discretion in the application of the net proceeds of this offering. We reserve the right to change the use of proceeds as a result of certain contingencies such as competitive developments, opportunities to acquire technologies or products and other factors. Pending the uses described above, we may temporarily invest the net proceeds of this offering in short- and medium-term interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

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## MARKET FOR REGISTRANT S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

### Market Information

Effective December 4, 2009, our common stock began quoting on the Over the Counter Bulletin Board, referred to as OTC Bulletin Board or OTCBB, under the symbol CORX.OB . Prior to that date, our common stock traded on the NYSE Amex (formerly The American Stock Exchange) under the symbol COR . The following table presents quarterly information on the high and low sales prices of the common stock for the interim periods and fiscal years ending December 31, 2011 (through September 6, 2011), December 31, 2010 and December 31, 2009, as furnished by the OTCBB or NYSE Amex, as applicable. The quotations on the OTCBB reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions.

| | High | Low |
|---|---|---|
| **Fiscal Year ending December 31, 2011** | | |
| Third Quarter (through September 6, 2011) | $ 0.11 | $ 0.05 |
| Second Quarter | 0.16 | 0.06 |
| First Quarter | 0.19 | 0.13 |
| **Fiscal Year ended December 31, 2010** | | |
| Fourth Quarter | $ 0.21 | $ 0.15 |
| Third Quarter | 0.18 | 0.14 |
| Second Quarter | 0.24 | 0.16 |
| First Quarter | 0.25 | 0.09 |
| **Fiscal Year ended December 31, 2009** | | |
| Fourth Quarter | $ 0.22 | $ 0.07 |
| Third Quarter | 0.32 | 0.18 |
| Second Quarter | 0.44 | 0.19 |
| First Quarter | 0.63 | 0.23 |

The high and low sales prices for our common stock on September 6, 2011, as quoted on the OTCBB, were $0.11 and $0.09, respectively.

### Holders

As of August 31, 2011, there were 396 record holders of our common stock, and approximately 8,000 beneficial owners.

### Dividends

We have never paid or declared any cash dividends on our common stock. We currently intend to retain any future earnings to finance the growth and development of our business, and we do not expect to pay any cash dividends on our common stock in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our Board of Directors and will depend on our financial condition, results of operations, capital requirements, restrictions under Delaware law and in current or future financing instruments and other factors our Board of Directors deems relevant.

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## CAPITALIZATION

The following table sets forth our capitalization as of June 30, 2011:

- on an actual basis; and
- on an as adjusted basis to reflect our sale of the 15,000,000 units offered by us at an assumed public offering price of $ per unit, after deducting estimated placement agent discounts and commissions and estimated offering costs payable by us.

You should read the following table in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and related notes included elsewhere in this prospectus.

| | As of June 30, 2011 | |
|---|---|---|
| | Actual | Pro Forma |
| | (unaudited) | |
| | (in thousands, except share data) | |
| Cash and cash equivalents | $ 1,420 | $ |
| Stockholders equity: | | |
| Common stock; $0.001 par value per share; 205,000,000 shares authorized and 78,858,197 issued and outstanding, actual; 205,000,000 shares authorized and 93,858,197 shares issued and outstanding, pro forma as adjusted | 79 | |
| Preferred stock; $0.001 par value per share; 5,000,000 shares authorized and 37,500 issued and outstanding, actual | 21 | |
| Additional paid-in capital | 120,860 | |
| Deficit accumulated during development stage | (120,426) | |
| Total stockholders equity | 534 | |
| Total capitalization | $ 1,954 | |

The table above excludes:

- 11,506,756 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering under our equity incentive plans, at a weighted average exercise price of $1.31 per share;
- 3,571,636 shares of common stock available for future grants under our equity incentive plans;
- 350,000 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering granted outside of our equity incentive plans, at a weighted average exercise price of $2.59 per share;
- 3,679 shares of common stock issuable upon the conversion of outstanding Series B convertible preferred stock, at a conversion price of $6.795 per share;

24,126,952 shares of common stock issuable upon the exercise of warrants outstanding prior to this offering, at a weighted average exercise price of $0.74 per share;

15,000,000 shares of common stock issuable upon the exercise of warrants to be issued to purchasers in this offering, at an exercise price of $ per share; and

900,000 shares of common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering, at an exercise price of $ per share.

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## DILUTION

Purchasers of the units offered by this prospectus will suffer immediate and substantial dilution in the net tangible book value per share of common stock. Our net tangible book value as of June 30, 2011 was approximately $534,000, or approximately $0.01 per share of common stock. Net tangible book value per share represents the amount of total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding as of June 30, 2011.

Dilution in net tangible book value per share represents the difference between the amount per unit paid by purchasers in this offering, assuming no value is attributed to the warrants, and the net tangible book value per share of our common stock immediately after this offering. After giving effect to our sale of 15,000,000 units in this offering at an assumed public offering price of $ , and after deducting the placement agent fees and estimated offering expenses payable by us, our net tangible book value as of June 30, 2011 would have been approximately $ , or $ per share of common stock. This represents an immediate increase of $ in net tangible book value per share of common stock to our existing stockholders and an immediate dilution in net tangible book value of per share of common stock to purchasers of units in this offering. The following table illustrates this per share dilution:

| | |
|---|---|
| Assumed public offering price per unit | |
| Net tangible book value per share as of June 30, 2011 | $ 0.01 |
| Increase in net tangible book value per share attributable to this offering | |
| Net tangible book value per share as of June 30, 2011, after giving effect to this offering | |
| Dilution in net tangible book value per share to purchasers | |

Purchasers may experience additional dilution upon exercise of the warrants offered by us.

The above table is based on 78,858,197 shares of our common stock outstanding as of June 30, 2011 and excludes, as of June 30, 2011:

- 11,506,756 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering under our equity incentive plans, at a weighted average exercise price of $1.31 per share;
- 3,571,636 shares of common stock available for future grants under our equity incentive plans;
- 350,000 shares of common stock issuable upon the exercise of stock options outstanding prior to this offering granted outside of our equity incentive plans, at a weighted average exercise price of $2.59 per share;
- 3,679 shares of common stock issuable upon the conversion of outstanding Series B convertible preferred stock, at a conversion price of $6.795 per share;
- 24,126,952 shares of common stock issuable upon the exercise of warrants outstanding prior to this offering, at a weighted average exercise price of $0.74 per share;
- 15,000,000 shares of common stock issuable upon the exercise of warrants to be issued to purchasers in this offering, at an exercise price of $ per share; and
- 900,000 shares of common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering, at an exercise price of $ per share.

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To the extent that any existing options or warrants are exercised, new options are issued under our equity incentive plans, or we otherwise issue additional shares of common stock in the future, there may be further dilution to purchasers in this offering.

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## MANAGEMENT S DISCUSSION AND ANALYSIS OF

## FINANCIAL CONDITION AND RESULTS OF OPERATIONS

**About Cortex Pharmaceuticals**

We are engaged in the discovery and development of innovative pharmaceuticals for the treatment of psychiatric disorders, neurological diseases and sleep apnea. Our primary focus is to develop novel small molecules that positively modulate AMPA-type glutamate receptors, a complex of proteins involved in communication between nerve cells in the mammalian brain. We are developing a family of proprietary pharmaceuticals known as AMPAKINE® compounds, which enhance the activity of the AMPA receptor. We believe that AMPAKINE compounds hold promise for the treatment of neurological and psychiatric diseases and disorders that are known, or thought, to involve depressed functioning of pathways in the brain that use glutamate as a neurotransmitter. Our most advanced clinical compounds are CX717 and CX1739, both of which are in Phase II clinical development.

We previously reported statistically and clinically positive results with CX717 in the treatment of adult patients with Attention Deficit Hyperactivity Disorder, or ADHD, and in the prevention of respiratory depression induced by pain-relieving opiates.

Our AMPAKINE compound CX1739 is substantially more potent than CX717 in animal studies. CX1739 has successfully completed human Phase I clinical trials and recently completed testing in a Phase II pilot study in the United Kingdom for the treatment of sleep apnea. We believe that the results from the pilot study warrant pursuing a larger trial to test the response to CX1739 by patients with central sleep apnea.

Given the positive results previously demonstrated with CX717 in adults with ADHD, with additional financial resources we plan to initiate a Phase II study with CX1739 as a potential treatment for ADHD.

We are aggressively pursuing patent protection of our technologies. We own or have exclusive rights (within our areas of product development) to more than 25 patent families comprising over 250 issued or allowed U.S. and foreign patents and over 200 additional U.S. patent applications and their international counterparts are pending.

In November 2003, a method of use patent for AMPAKINE compounds in the treatment of memory and cognition was issued to the University of California by the European Patent Office, or the EPO. Rights to that patent are included in our sublicense to the AMPAKINE technology from the University of California. Following its issuance, oppositions to the patent were filed by Eli Lilly and Company and GlaxoSmithKline. In January 2008, the EPO decided to revoke the patent citing, among other reasons, a filing technicality related to matter added to the original patent application. We subsequently filed a formal appeal of the EPO s decision, which halted the revocation. The patent was scheduled to expire in 2013 and the legal process related to the appeal continued for most of the remaining life of the patent, until we withdrew our appeal in July 2011 and the revocation became effective. Given the patent s limited life for commercial protection, we do not deem the revocation of this patent as material to the future of the AMPAKINE technology. The same patent has been issued in the U.S. and remains in force.

Most importantly, we own or have exclusive rights to a large portfolio of composition of matter patents or pending patent applications with much longer patent lives that we believe are fundamental and more critical to our commercial protection worldwide. We have filed several new patents for our AMPAKINE compounds that, if granted, will provide patent protection for our new compounds up to 2028. In April 2011, we announced the receipt of a notice of allowance from the U.S. Patent and Trademark Office for the patent filed for our lead compound AMPAKINE CX1739 and approximately 80 additional compound structures.

Furthermore, because patent rules and regulations, and burden of proof requirements differ substantially between the U.S. and Europe, specifically in regards to the revocation reason cited by the EPO above, we believe that the decision by the EPO is not likely to impact the patents that have issued in the U.S.

The AMPAKINE platform addresses large potential markets. Our business plan involves partnering with larger pharmaceutical companies for research, development, clinical testing, manufacturing and global marketing of

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AMPAKINE compounds for those indications that require sizable, expensive Phase III clinical trials and very large sales forces to achieve significant market penetration.

At the same time, subject to availability of sufficient resources, we plan to develop compounds internally for a selected set of indications, many of which will allow us to apply for orphan drug status. Such designation by the Food and Drug Administration, or the FDA, is usually applied to products where the number of patients in the United States in the given disease category is typically less than 200,000. These orphan drug indications typically require more modest investment in the development stages, follow a quicker regulatory path to approval, and involve a more concentrated and smaller sales force targeted at selected medical centers and a limited number of medical specialists in the United States and Europe.

In our licensing discussions, we seek to reserve rights that may be viewed as a natural expansion beyond some of the orphan drug uses to selected larger areas of therapy to thereby allow us to potentially further develop our compounds for such larger non-orphan drug indications. If we are successful in the pursuit of this operating strategy, we may be in a position to contain our costs over the next few years, to maintain our focus on the research and early development of novel pharmaceuticals (where we believe that we have the ability to compete) and eventually to participate more fully in the commercial development of AMPAKINE products in the United States.

**Critical Accounting Policies and Management Estimates**

The SEC defines critical accounting policies as those that are, in management s view, most important to the portrayal of our financial condition and results of operations and most demanding of our judgment. Our discussion and analysis of our financial condition and results of operations are based upon our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and related disclosures of contingent assets and liabilities.

We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances. This process forms the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

**Revenue Recognition**

We recognize revenue when all four of the following criteria are met: (i) pervasive evidence that an arrangement exists; (ii) delivery of the products and/or services has occurred; (iii) the fees earned can be readily determined; and (iv) collectibility of the fees is reasonably assured.

Amounts received for upfront technology license fees under multiple-element arrangements are deferred and recognized over the period of committed services or performance, if such arrangements require our on-going services or performance.

We record research grant revenues as the expenses related to the grant projects are incurred. Amounts received under research grants are nonrefundable, regardless of the success of the underlying research, to the extent that such amounts are expended in accordance with the approved grant project.

**Employee Stock Options and Stock-Based Compensation**

We measure our share-based compensation cost at the grant date based on the estimated value of the award and recognize it as expense over the vesting period. Determining the fair value of share-based awards at the grant date requires judgment in estimating the amount of share-based awards that are expected to be forfeited. If actual results differ significantly from these estimates, stock-based compensation expense and our results of operations could be materially impacted.

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Stock options and warrants issued to our consultants and other non-employees as compensation for services to be provided to us are accounted for based upon the fair value of the services provided or the estimated fair market value of the option or warrant, whichever can be more clearly determined. We recognize this expense over the period the services are provided.

**Convertible Debt and Equity Instruments**

We review the features of our issued financing instruments to determine whether such instruments are appropriately measured and classified as either debt or equity in our financial statements. Generally, instruments that include a provision that may require settlement in cash are recorded as a liability.

The conversion features within our issued convertible instruments are valued separately from the preferred stock or debt securities. We allocate the proceeds received from a financing transaction that includes a convertible instrument to the convertible preferred stock or debt and any detachable instruments, such as warrants, on a relative fair value basis.

The value allocated to the convertible instrument is used to estimate an effective conversion price for the convertible preferred stock or debt, and to measure the intrinsic value, if any, of the conversion feature on the date that we issue the securities.

The above listing is not intended to be a comprehensive list of all of our accounting policies. In many cases, the accounting treatment of a particular transaction is specifically dictated by accounting principles generally accepted in the United States, with no need for our judgment in their application. There are also areas in which our judgment in selecting any available alternative would not produce a materially different result.

**Going Concern**

Our independent registered public accounting firm has expressed substantial doubt as to our ability to continue as a going concern, in its report for the fiscal year ended December 31, 2010, given that we do not have adequate working capital to finance our day-to-day operations. Our continued existence depends upon the success of our efforts to raise additional capital necessary to meet our obligations as they become due and to obtain sufficient capital to execute our business plan. We intend to obtain capital primarily through issuances of debt or equity or entering into collaborative or merger agreements with other pharmaceutical companies. There can be no assurance that we will be successful in completing additional financing or strategic transactions. If we cannot obtain adequate funding, we may be required to significantly curtail or even shut down our operations.

**Results of Operations**

***General***

In October 2000, we entered into a research collaboration agreement and an exclusive license agreement with Les Laboratoires Servier, or Servier. The agreements allowed Servier to develop and commercialize select AMPAKINE compounds in defined territories of Europe, Asia the Middle East and certain South American countries as a treatment for (i) declines in cognitive performance associated with aging, (ii) neurodegenerative diseases and (iii) anxiety disorders.

In early December 2006, we terminated the research collaboration with Servier and as a result the worldwide rights for the AMPAKINE technology for treatment of neurodegenerative diseases were returned to us, other than three compounds selected by Servier for commercialization. In November 2010, Servier selected a jointly discovered high impact AMPAKINE compound, CX1632 (S47445), to advance into Phase I clinical testing.

In June 2011, our agreements with Servier were amended and restated with an option agreement for the AMPAKINE CX1632. In exchange for an option to expand its rights to the compound, Servier provided us a non-refundable payment of $1,000,000.

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During the option period, we and Servier remain joint owners of the patents and patent applications relating to CX1632. We currently have rights to develop and market CX1632 in all of North America and selected South American countries as well as Australia and New Zealand.

On or before October 31, 2011, Servier may exercise its option to acquire sole ownership of the global patent rights to CX1632, along with a sub-license of our rights to all indications licensed from the University of California for use with CX1632. If Servier exercises the option, it will pay us an additional $2,000,000, as well as certain royalties and milestone payments to the University of California. However, we will not be entitled to any royalties or further payments from Servier s development and commercialization of CX1632. We retain all rights for the remaining AMPAKINE technology on a worldwide basis.

In March 2010, we entered into an asset purchase agreement with Biovail. Pursuant to the asset purchase agreement, Biovail acquired our interests in CX717, CX1763, CX1942 and the injectable dosage form of CX1739, as well as certain of our other AMPAKINE compounds and related intellectual property for use in the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. In connection with the transaction, Biovail paid us a lump sum of $9,000,000 upon execution of the asset purchase agreement and an additional $1,000,000 upon completion of the specified transfer plan in September 2010. In addition, the agreement provided us with the right to receive up to three milestone payments in an aggregate amount of up to $15,000,000 plus the reimbursement of certain related expenses, each conditioned upon the occurrence of particular events relating to the clinical development of certain assets that Biovail acquired.

As part of the transaction, Biovail licensed back to us certain exclusive and irrevocable rights to some acquired AMPAKINE compounds, other than CX717, an injectable dosage form of CX1739, CX1763 and CX1942, for use outside of the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. Accordingly, following the transaction with Biovail, we retained rights for the majority of patented compounds in our AMPAKINE drug library, as well as all rights to the non-acquired AMPAKINE compounds for the treatment of neurological diseases and psychiatric disorders that have historically been a focus of our portfolio. Additionally, we retained our rights to develop and commercialize AMPAKINE compounds as a potential treatment for sleep apnea disorders, including an oral dosage form of CX1739.

In September 2010, Biovail s parent corporation, Biovail Corporation, combined with Valeant Pharmaceuticals International in a merger transaction and the combined company was renamed Valeant Pharmaceuticals International, Inc., or Valeant. Following the merger, Valeant and Biovail conducted a strategic and financial review of the product pipeline and, as a result, in November 2010, Biovail announced its intent to exit from the respiratory depression project acquired from us in March 2010.

Following that announcement, we immediately entered into discussions with Biovail regarding the future of the respiratory depression project. In March 2011, we entered into a new agreement with Biovail to reacquire the AMPAKINE compounds, patents and rights that Biovail acquired from us in March 2010. The new agreement included an upfront payment by us of $200,000 and potential future payments of up to $15,150,000 based upon the achievement of certain development and New Drug Application submission and approval milestones. Biovail is also eligible to receive additional payments of up to $15,000,000 based upon our net sales of an intravenous dosage form of the compounds for respiratory depression.

In addition, at any time following the completion of Phase I clinical studies and prior to the end of Phase IIa clinical studies, Biovail retains an option to co-develop and co-market intravenous dosage forms of an AMPAKINE compound as a treatment for respiratory depression and vaso-occlusive crises associated with sickle cell disease. In such an event, we would be reimbursed for certain development expenses to date and Biovail would share in all such future development costs with us. If Biovail makes the co-marketing election, we would owe no further milestone payments to Biovail and we would be eligible to receive a royalty on net sales of the compound by Biovail or its affiliates and licensees. Following the execution of the March 2011 agreement, Biovail was renamed Valeant International (Barbados) SRL.

From our date of organization of February 10, 1987 through the fiscal quarter ended on June 30, 2011, we sustained losses approximating $116,048,000. Due to projected fluctuations in funding, continuing losses are likely over the next several years, as our ongoing operating expenses will only be offset, if at all, by potential fees from

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Servier s exercise of its option to expand its rights to AMPAKINE CX1632, or under planned strategic alliances that we are seeking with other pharmaceutical companies for the clinical development, manufacturing and marketing of our products. The nature and timing of payments to us under the Servier agreement or other planned strategic alliances, if and when entered into, are likely to significantly affect our operations and financing activities and to produce substantial period-to-period fluctuations in reported financial results. Over the longer term, we will require successful commercial development of our products by our prospective partners to attain sustained profitable operations from royalties or other product-based revenues.

We believe that inflation and changing prices have not had a material impact on our ongoing operations to date.

*Comparison of the Three Months and Six Months ended June 30, 2011 and 2010*

For the three months ended June 30, 2011, our net loss of approximately $356,000 compares with a net loss of approximately $2,454,000 for the corresponding prior year period. For the six months ended June 30, 2011, our net loss of approximately $1,912,000 compares with our net income of approximately $3,141,000 for the corresponding prior year period, due primarily to revenues of $9,000,000 during the prior year period from the March 2010 transaction with Biovail, as detailed above.

License revenues for the three and six months ended June 30, 2011 represent the $1,000,000 received under our new option agreement with Servier. Grant revenues for the three and six months ended June 30, 2011 include amounts awarded by the Michael J. Fox Foundation for Parkinson s Research. The related funding will allow us to test select AMPAKINE compounds for their ability to restore brain function in animal models of Parkinson s disease.

Our research and development expenses for the three months ended June 30, 2011 decreased to approximately $645,000 from approximately $947,000 for the corresponding prior year quarter, or by 32%, with the most significant decrease due to timing of clinical development expenses.

Our clinical development expenses of approximately $45,000 for the quarter ended June 30, 2011 related to our lead AMPAKINE CX1739, including amounts for our recently completed Phase IIa proof of concept study with the compound in patients with sleep apnea. For the quarter ended June 30, 2010, clinical development expenses of approximately $228,000 included amounts for the sleep apnea study with CX1739, along with the close-out of our positron emission tomography (PET) scan study with CX717 in patients with Alzheimer s disease. The CX717 study was closed following the sale of the compound to Biovail in March 2010. As noted above, we subsequently reacquired CX717 in March 2011.

Amounts incurred for our internal research and development costs, including indirect amounts allocated to research and development, and costs for retaining outside experts for consulting and research activities are deemed to benefit the entire AMPAKINE platform rather than specific AMPAKINE compounds.

For the quarter ended June 30, 2011 and 2010, our expenses for research and development personnel, outside experts and consultants approximated $277,000 and $285,000, respectively. For the same periods, costs for laboratory facility and supply expenses were approximately $95,000 and $123,000, respectively, and costs related to the access and protection of our AMPAKINE technology totaled approximately $233,000 and $280,000, respectively.

For the quarter ended June 30, 2011, our non-cash stock compensation charges for research and development amounted to a credit of approximately $5,000 compared to charges of approximately $31,000 for the corresponding prior year period, with the difference reflecting recovered amounts related to previously forfeited options.

For the six months ended June 30, 2011, our research and development expenses decreased to approximately $1,289,000 from approximately $2,570,000 for the corresponding prior year period, or by 50%, with the decrease primarily reflecting sublicensing fees of $910,000 during the prior year period related to the March 2010 transaction with Biovail. Expense for the 2011 period includes the $200,000 payment to reacquire the AMPAKINE rights and compounds from Biovail in March 2011, along with sublicensing fees of $53,000 related to the June 2011 transaction with Servier.

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Other costs related to the access and protection of our AMPAKINE technology totaled approximately $296,000 and $399,000 for the six months ended June 30, 2011 and 2010, respectively, with the decrease reflecting the timing of fees for our patent filings. For the same periods, our expenses for research and development personnel, outside experts and consultants approximated $487,000 and $650,000, respectively, with most of the decrease due to a decrease in personnel-related expenses. Costs for laboratory facility and supply expenses were approximately $199,000 and $242,000 for the six months ended June 30, 2011 and 2010, respectively.

For the six months ended June 30, 2011, our non-cash stock compensation charges for research and development amounted to a credit of approximately $35,000 compared to charges of approximately $63,000 for the corresponding prior year period, with the difference reflecting recovered amounts related to previously forfeited options.

Clinical development expenses of $89,000 for the six months ended June 30, 2011 include amounts related to our Phase IIa proof of concept study with AMPAKINE CX1739 in sleep apnea. For the six months ended June 30, 2010, clinical development expenses of $306,000 included amounts for the sleep apnea study, along with amounts incurred for our earlier completed Phase II studies with AMPAKINE CX717. As stated above, CX717 was sold in our transaction that we completed with Biovail in March 2010 and subsequently reacquired by us in March 2011.

At this time, we are just beginning the clinical development of CX1739 and developing other preclinical backup candidates. Subject to the availability of sufficient finances, as the clinical development of CX1739 expands, our research and development costs are anticipated to increase significantly.

External preclinical and clinical expenses to date through June 30, 2011 for CX717 and CX1739 amounted to approximately $16,000,000 and $4,000,000, respectively.

Our general and administrative expenses for the three months ended June 30, 2011 decreased from approximately $1,023,000 to approximately $804,000, or by 21%, compared to the corresponding prior year period, with the decrease mostly reflecting an increased use of advisory consultants during the prior year period.

For the six months ended June 30, 2011, our general and administrative expenses decreased from approximately $2,731,000 to approximately $1,744,000, or by 36% compared to the six-month period ended June 30, 2010, primarily reflecting legal and investment banking fees during the prior year period related to the March 2010 transaction that we completed with Biovail.

For the three months ended June 30, 2011, our non-cash stock compensation charges within general and administrative expenses decreased from approximately $62,000 to approximately $34,000, or by 45%, relative to the corresponding prior year period. For the six months ended June 30, 2011, these charges decreased from approximately $146,000 to approximately $78,000, or by 47%, relative to the corresponding prior year period, with the decreases for both periods primarily due to the completed vesting schedules of earlier granted stock options.

For the three months ended June 30, 2011, net interest income of approximately $8,000 compares with net interest expense of approximately $485,000 for the prior year quarter. For the six months ended June 30, 2011, net interest income of approximately $11,000 compares with net interest expense of approximately $558,000 for the corresponding prior year period. Net interest expense for the prior year periods includes amounts accruing on our convertible promissory note issued to Samyang, along with amortization of capitalized offering costs and the beneficial conversion feature related to such convertible note transaction.

Accelerated amortization charges for the offering costs and the beneficial conversion feature were recorded upon Samyang s conversion of the promissory note in June 2010, along with non-cash charges for the allocated value of warrants issued to Samyang upon the note s conversion. See Note 4 of Notes to Condensed Financial Statements.

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*Comparison of the Years ended December 31, 2010 and 2009*

For the fiscal year ended December 31, 2010, our net income applicable to common stock of approximately $1,629,000 compares with a net loss applicable to common stock of approximately $10,788,000 for the corresponding prior year period.

Revenues for the year ended December 31, 2010 include amounts related to our March 2010 transaction with Biovail. As detailed above, we received $10,000,000 in connection with the transaction, including $9,000,000 upon execution of the asset purchase agreement and an additional $1,000,000 upon completion of the specified transfer plan in September 2010.

Grant revenues for the year ended December 31, 2010 include amounts awarded by the Michael J. Fox Foundation for Parkinson s Research. The related grant will provide funding to test select AMPAKINE compounds for their ability to restore brain function in animal models of Parkinson s disease.

Grant revenues for 2010 also include approximately $245,000 awarded under a program created by the U.S. Congress in the Patient Protection and Affordable Care Act of 2010. The grant reimbursed certain qualifying expenses related to our AMPAKINE CX1739.

For the year ended December 31, 2010, our research and development expenses decreased from approximately $4,598,000 to approximately $3,739,000, or by 19%, and included sublicense payments approximating $940,000 related to our transaction with Biovail. Excluding such sublicense payments, our research and development expenses decreased significantly relative to the prior year period due to the reduction in force that we implemented in mid-March 2009 and as a result of decreased clinical development expenses.

Our expenses for the prior year period included amounts for Phase I clinical testing of AMPAKINE CX1739, as well as initiation of a Phase IIa proof of concept study with the compound in sleep apnea. Total external preclinical and clinical development expenses for CX1739 totaled approximately $310,000 and $1,021,000 for the years ended December 31, 2010 and 2009, respectively.

Our AMPAKINE CX717 was sold in our transaction that we completed with Biovail in March 2010 and subsequently reacquired by us in March 2011. External preclinical and clinical development costs for CX717 for the years ended December 31, 2010 and 2009 totaled approximately $94,000 and $106,000, respectively, with amounts for 2010 reflecting costs triggered by our transaction with Biovail. External preclinical expenses to date through December 31, 2010 for CX717 and CX1739 amounted to approximately $16,000,000 and $3,500,000, respectively.

Other external preclinical expenses for the years ended December 31, 2010 and 2009 for less advanced AMPAKINE compounds were not significant. In total, our external clinical and preclinical expenses for the years ended December 31, 2010 and 2009 approximated $338,000 and $1,143,000, respectively.

Amounts incurred for all internal research and development costs, including personnel costs and indirect amounts allocated to research and development, as well as costs for retaining outside experts for consulting and research activities are deemed to benefit the entire AMPAKINE platform and are not separately evaluated by compound. Such costs, excluding amounts for non-cash stock compensation charges, totaled approximately $3,338,000 and $3,229,000 for the years ended December 31, 2010 and 2009, respectively.

Of these totals, as mentioned above, amounts for 2010 include $940,000 of sublicense fees related to our March 2010 transaction with Biovail. Other costs related to the access and protection of our AMPAKINE technology totaled approximately $544,000 and $589,000 for the years ended December 31, 2010 and 2009, respectively. Expenses for personnel, outside experts and consultants approximated $1,373,000 and $1,955,000 for the years ended December 31, 2010 and 2009, respectively. For the same periods, costs for laboratory facility and supply expenses were approximately $481,000 and $684,000, respectively.

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At this time, we are just beginning the clinical development of CX1739 and developing other preclinical backup candidates. Subject to the availability of sufficient finances, as the clinical development of CX1739 expands, our research and development costs are anticipated to increase significantly.

For the year ended December 31, 2010, the non-cash stock compensation charges for research and development decreased from approximately $226,000 to approximately $63,000, or by 72%, compared with the prior year, reflecting fluctuations in our stock price, the completed vesting schedules of earlier granted stock options, credits for forfeited options and a decrease in options granted relative to the prior year period.

Our general and administrative expenses for the year ended December 31, 2010 increased from approximately $3,737,000 to approximately $4,553,000, or by 22%, compared to the corresponding prior year period, mostly reflecting legal and investment banking fees related to the March 2010 transaction that we completed with Biovail, along with fees for an increased use of advisory consultants to assist us in identifying strategic opportunities.

For the year ended December 31, 2010, our non-cash stock compensation charges within general and administrative expenses decreased from approximately $347,000 to approximately $245,000, or by 29%, relative to the prior year, primarily due to the completed vesting schedules of earlier granted options and a decrease in options granted relative to the prior year.

Net interest expense for the year ended December 31, 2010 of approximately $545,000 compares with net interest income of approximately $17,000 for the prior year. Amounts for the year ended December 31, 2010 include interest on our convertible promissory note that we issued to Samyang in January 2010, and charges for the amortization of capitalized offering costs and the beneficial conversion feature recorded in connection with the transaction.

Accelerated amortization charges for the offering costs and the beneficial conversion feature were recorded upon Samyang s conversion of the promissory note in June 2010, along with non-cash charges for the allocated value of warrants issued to Samyang upon the note s conversion.

The net loss applicable to common stock for the year ended December 31, 2009 included charges of approximately $832,000 related to the beneficial conversion feature of our 0% Series E Convertible Preferred Stock that we issued in April 2009 and $1,515,000 related to the beneficial conversion feature of our Series F Convertible Preferred Stock that we issued in July 2009. These non-cash charges relate to the accounting requirements for the difference between the fair value of our common stock and the conversion price of the preferred stock on the date the preferred stock was issued.

**Liquidity and Capital Resources**

*Sources and Uses of Cash*

In connection with the agreement that we signed with Servier in June 2011, we received a non-refundable payment of $1,000,000. If Servier elects to exercise its option to expand its rights to the jointly discovered AMPAKINE CX1632 on or before October 31, 2011, of which there can be no assurance, Servier has agreed to pay us an additional $2,000,000.

Pursuant to the terms of our transaction with Biovail in March 2010, Biovail paid us $10,000,000 during the year ended December 31, 2010, including $9,000,000 during the six months ended June 30, 2010. Additionally, the March 2010 transaction included rights to receive milestone payments and expense reimbursements from Biovail. However, pursuant to the terms of our March 2011 asset repurchase transaction with Biovail, we are no longer entitled to receive any future milestone payments or expense reimbursements from Biovail. Rather, as a result of the March 2011 transaction we are obligated to make future payments to Biovail depending upon the occurrence of particular events relating to the clinical development of the repurchased assets.

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We also may receive proceeds from the exercise of previously issued warrants to purchase shares of our common stock. The table below summarizes the warrants outstanding as of June 30, 2011 that were issued in connection with prior offerings and placements of our securities. None of the warrants detailed are in-the-money as of June 30, 2011 and we can give no assurance that we will receive proceeds from the exercise of any of the outstanding warrants.

| Date of Issuance | Exercise Price per Share | Number of Warrants Outstanding as of June 30, 2011 | Expiration Date | Approximate Potential Proceeds, if Fully Exercised |
|---|---|---|---|---|
| January 2007[1] | $ 1.66 | 2,996,927 | January 21, 2012 | $ 4,975,000 |
| August 2007[1] | $ 2.64 | 2,830,000 | August 28, 2012 | $ 7,471,000 |
| August 2007[2] | $ 3.96 | 176,875 | August 28, 2012 | $ 700,000 |
| April 2009[1] | $ 0.27 | 6,941,176 | October 17, 2012 | $ 1,889,000 |
| April 2009[2] | $ 0.26 | 433,824 | October 17, 2012 | $ 113,000 |
| July 2009[1] | $ 0.27 | 6,060,470 | January 31, 2013 | $ 1,636,000 |
| July 2009[2] | $ 0.37 | 606,047 | January 31, 2013 | $ 222,000 |
| June 2010[1] | $ 0.21 | 4,081,633 | June 7, 2012 | $ 841,000 |

(1) Represents warrants issued to the investor(s) in the related transaction.

(2) Represents warrants issued to the placement agent(s) in the related transaction.

Warrants outstanding from the January 2007 transaction provide a call right in our favor to the extent that the closing price of our common stock exceeds $3.35 per share for 13 consecutive trading days, subject to certain circumstances.

Similarly, subject to certain circumstances, the warrants issued to the investor in the April 2009 and July 2009 transactions provide a call right in our favor to the extent that the closing price of our common stock exceeds $0.68 per share and $0.54 per share, respectively, for 20 consecutive trading days. Warrants issued to the placement agent for the April 2009 and July 2009 transactions provide a call right in our favor to the extent that the closing price of our common stock exceeds $0.52 per share and $0.54 per share, respectively, for 20 consecutive trading days, subject to certain circumstances.

Warrants issued to the investor in the April 2009 transaction were originally issued with an exercise price of $0.34 per share. In February 2010, the exercise price for these warrants was reduced to $0.27 per share in exchange for the investor s consent and waiver with respect to our private placement of a convertible promissory note that we completed in January 2010.

Warrants issued to Samyang in connection with the conversion of its promissory note in June 2010 provide a call right in our favor to the extent that the weighted average closing price of our common stock exceeds $0.309 per share for each of ten consecutive trading days, subject to certain circumstances.

Warrants detailed above with issuance dates between January 2007 and June 2009 may be settled by a cashless exercise under certain circumstances. In such an event, the holder of the warrants would receive a number of unregistered shares representing the gain on exercise of such warrants, divided by the volume weighted average price of the Company s common stock on the trading day immediately preceding such exercise.

As of June 30, 2011, we had cash and cash equivalents totaling approximately $1,420,000 and working capital of approximately $294,000. In comparison, as of December 31, 2010, we had cash, cash equivalents and marketable securities of approximately $3,031,000 and working capital of approximately $2,120,000. The decreases in cash and working capital reflect amounts required to fund our operations.

For the six months ended June 30, 2011, net cash used in operating activities was approximately $1,621,000, and included our net loss for the period of approximately $1,912,000, adjusted for non-cash expenses

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for depreciation and stock compensation approximating $93,000, and changes in operating assets and liabilities. Net cash provided by operating activities was approximately $3,478,000 for the six months ended June 30, 2010 and included our net income for the period of approximately $3,141,000, adjusted for non-cash expenses for depreciation, amortization and stock compensation approximating $783,000, and changes in operating assets and liabilities.

For the six months ended June 30, 2011, net cash provided by investing activities approximated $2,003,000 and primarily represented the proceeds from the maturity of marketable securities. Net cash used in investing activities for the six months ended June 30, 2010 approximated $2,615,000 and primarily represented the purchases of marketable securities, partially offset by the proceeds from the sale of fixed assets.

There was no cash provided by or used in financing activities for the six months ended June 30, 2011. Net cash provided by financing activities approximated $1,472,000 during the six months ended June 30, 2010 and resulted from our private placement of a convertible promissory note in January 2010.

*Commitments*

We lease approximately 32,000 square feet of research laboratory, office and expansion space under an operating lease that expires May 31, 2012. The commitments under the lease agreement for the remaining six months of the year ending December 31, 2011 and the five months ending May 31, 2012 are approximately $299,000 and $249,000, respectively.

In addition to amounts reflected on the balance sheet as of June 30, 2011, our remaining commitments for preclinical and clinical studies amount to approximately $196,000.

In June 2000, we received approximately $247,000 from the Institute for the Study of Aging, or the Institute, a non-profit foundation supported by the Estee Lauder Trust. The advance partially offset our limited costs for our testing in patients with mild cognitive impairment that we conducted with our partner, Servier. Provided that we comply with the conditions of the funding agreement, including the restricted use of the amounts received, repayment of the advance has been extended until we enter an AMPAKINE compound into Phase III clinical trials for Alzheimer s disease. Upon such potential clinical trials, repayment would include interest computed at a rate equal to one-half of the prime lending rate. In lieu of cash, in the event of repayment the Institute may elect to receive the balance of outstanding principal and accrued interest as shares of our common stock. The conversion price for such form of repayment shall initially equal $4.50 per share, subject to adjustment under certain circumstances.

*Staffing*

We currently have six full-time employees. We believe that our number of employees is sufficient to meet our personnel requirements and we do not anticipate significant increases in our employee levels during the next twelve months.

*Outlook*

We believe that we have adequate financial resources to conduct our operations into the fourth quarter of 2011. Our forecast of the period of time through which our financial resources will be adequate to support our operations is forward-looking information, and actual results could vary.

Our ongoing cash requirements will depend on numerous factors, particularly the progress of our clinical trials involving CX1739 and our ability to negotiate and complete collaborative agreements or out-licensing arrangements. In order to help fund our on-going operating cash requirements, we intend to seek new collaborations for our low impact and high impact AMPAKINE programs that include initial cash payments and on-going development support. We may also seek to raise additional funds and explore other strategic and financial alternatives, such as a merger or sale of assets transaction.

There are significant uncertainties as to our ability to access potential sources of capital. We may not be able to enter into any collaboration on terms acceptable to us, or at all, due to conditions in the pharmaceutical

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industry or in the economy in general. Competition for such arrangements is intense, with a large number of biopharmaceutical companies attempting to secure alliances with more established pharmaceutical companies. Although we have been engaged in discussions with candidate companies, there is no assurance that an agreement or agreements will arise from these discussions in a timely manner, or at all, or that revenues that may be generated thereby will offset operating expenses sufficiently to reduce our short-term funding requirements.

Even if we are successful in obtaining a collaboration for our AMPAKINE program, we may have to relinquish rights to technologies, product candidates or markets that we might otherwise seek to develop ourselves. These same risks apply to any attempt to out-license our compounds.

Similarly, due to market conditions and other possible limitations on equity offerings, we may not be able to sell additional securities or raise other funds on terms acceptable to us, if at all. Any additional equity financing, if available, would likely result in substantial dilution to existing stockholders.

*Additional Risks and Uncertainties*

Our proposed products are in the preclinical or early clinical stage of development and will require significant further research, development, clinical testing and regulatory clearances. They are subject to the risks of failure inherent in the development of products based on innovative technologies. These risks include, but are not limited to, the possibilities that any or all of the proposed products will be found to be ineffective or unsafe, or otherwise fail to receive necessary regulatory clearances; that the proposed products, although effective, will be uneconomical to market; that third parties may now or in the future hold proprietary rights that preclude us from marketing them; or that third parties will market superior or equivalent products. Accordingly, we are unable to predict whether our research and development activities will result in any commercially viable products or applications. Further, due to the extended testing and regulatory review process required before marketing clearance can be obtained, we do not expect to be able to commercialize any therapeutic drug for at least four years, either directly or through our current or prospective partners or licensees. There can be no assurance that our proposed products will prove to be safe or effective or receive regulatory approvals that are required for commercial sale.

*Off-Balance Sheet Arrangements*

We have not engaged in any off-balance sheet arrangements within the meaning of Item 303(a)(4)(ii) of Regulation S-K.

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## BUSINESS

We were incorporated in Delaware on February 10, 1987 under our original name, X-Age, Inc. On August 24, 1988, we changed our name to Cortex Pharmaceuticals, Inc.

We are engaged in the discovery and development of innovative pharmaceuticals for the treatment of psychiatric disorders and neurological diseases. Our primary focus is to develop novel small molecule compounds that positively modulate AMPA-type glutamate receptors, a complex of proteins involved in the communication between nerve cells in the mammalian brain. These compounds, termed AMPAKINE® compounds, enhance the activity of the AMPA receptor. These molecules are designed and developed as proprietary pharmaceuticals because we believe they hold promise for the treatment of neurological and psychiatric diseases and disorders that are known, or thought, to involve depressed functioning of pathways in the brain that use glutamate as a neurotransmitter. Our most advanced clinical compounds are CX717 and CX1739, both of which are in Phase II clinical development.

The AMPAKINE platform addresses large potential markets. According to research data from IMS Health, in 2008 worldwide sales for central nervous system products to treat brain-related disorders and diseases exceeded $112 billion. Our business plan involves partnering with larger pharmaceutical companies for research, development, clinical testing, manufacturing and global marketing of specific AMPAKINE compounds for those indications that require sizable, expensive Phase III clinical trials and very large sales forces to achieve significant market penetration. Diseases such as Alzheimer s disease, mild cognitive impairment, or MCI, Attention Deficit Hyperactivity Disorder, or ADHD, schizophrenia, depression, respiratory depression caused by opiate analgesics, and sleep apnea may benefit from treatment with AMPAKINE drugs and require a large market presence.

At the same time, we plan to develop compounds internally for a selected set of indications, some of which will allow us to apply for Orphan Drug status. Such designation by the Food and Drug Administration, or the FDA, is usually applied to products where the number of patients in the United States, or the U.S., in the given disease category is typically less than 200,000. The European Medicines Agency adopted a similar system termed The Regulation of Orphan Medicinal Products. These Orphan Drug indications typically require more modest investment in the development stages, follow a quicker regulatory path to approval, and involve a more concentrated and smaller sales force targeted at selected medical centers in the U.S. and Europe. Such Orphan Drug indications that we plan to pursue internally may include Huntington s disease, Fragile X syndrome and Rett syndrome.

We also may pursue other Orphan Drug indications and upon any related approval, may expand our clinical potential into non-Orphan Drug indications. As an example, if we obtain approval for an indication related to Fragile X syndrome, expansion into treatment of autism-spectrum disorders may follow. While the market potential in the U.S. for most of the listed Orphan Drug indications varies between $100 million and $500 million per indication, we estimate that the consolidated potential for all indications that we may pursue, including expansion into non-Orphan Drug indications, provides us with a market potential of over $3 billion. This amount does not include any revenues from any potential license of our intellectual property. We will continue to seek one or more significant license or collaboration arrangements with larger pharmaceutical companies, while we prepare ourselves for potential entrance into the pharmaceutical market with our own products. These arrangements may permit other applications of the AMPAKINE compounds to be advanced into later stages of clinical development and may provide access to the extensive clinical trials management, manufacturing and marketing expertise of such companies.

In January 1999, we entered into a research collaboration and exclusive worldwide license agreement with Organon, at that time a subsidiary of Akzo Nobel. The agreement granted Organon worldwide rights to develop and commercialize our AMPAKINE technology for the treatment of schizophrenia and depression. In November 2007, Organon was acquired by Schering-Plough Corporation. Subsequently, in November 2009, Merck acquired Schering Plough. Following its merger with Shering-Plough, in September 2010 Merck notified us that it would not be proceeding further with the licensed AMPAKINE technology.

As a result, rights to the use of AMPAKINE compounds for the treatment of schizophrenia and depression were returned to us. Merck retains ownership of the compounds developed by Organon or developed jointly by Organon with us during the collaboration, but no longer has license rights to our patents or know-how. We are free to pursue strategic opportunities for all of our other AMPAKINE compounds in schizophrenia and depression.

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In October 2000, we entered into a research collaboration agreement and a license agreement with Servier. The license agreement, as amended, allowed Servier to develop and commercialize three AMPAKINE compounds selected at the end of the research collaboration in defined territories of Europe, Asia, the Middle East and certain South American countries as a treatment for (i) declines in cognitive performance associated with aging, (ii) neurodegenerative diseases and (iii) anxiety disorders. The indications covered include, but were not limited to, Alzheimer s disease, MCI, sexual dysfunction and anxiety disorders. The research collaboration with Servier was terminated at the end of 2006; accordingly, the worldwide rights for (a) treatment of declines in cognitive performance associated with aging, (b) neurodegenerative diseases, (c) anxiety disorders, and (d) sexual dysfunction have been returned to us.

In November 2010, Servier selected a jointly discovered high impact AMPAKINE compound, CX1632 (S47445), to advance into Phase I clinical testing. In June 2011, our agreements with Servier were amended and restated with an option agreement for the AMPAKINE CX1632. In exchange for an option to expand its rights to the compound, Servier provided us a non-refundable payment of $1,000,000.

During the option period, we and Servier remain joint owners of the patents and patent applications relating to CX1632. We currently have rights to develop and market CX1632 in all of North America and selected South American countries as well as Australia and New Zealand.

On or before October 31, 2011, Servier may exercise its option to acquire sole ownership of the global patent rights to CX1632, along with a sub-license of our rights to all indications licensed from the University of California for use with CX1632. If Servier exercises the option, it will pay us an additional $2,000,000, as well as certain royalties and milestone payments to the University of California. However, we will not be entitled to any royalties or further payments from Servier s development and commercialization of CX1632. We retain all rights for the remaining AMPAKINE technology on a worldwide basis.

In March 2010, we entered into an asset purchase agreement with Biovail. Pursuant to the asset purchase agreement, Biovail acquired our interests in CX717, CX1763, CX1942 and the injectable dosage form of CX1739, as well as certain of our other AMPAKINE compounds and related intellectual property for use in the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. In connection with the transaction, Biovail paid us the lump sum of $9,000,000 upon the execution of the asset purchase agreement and an additional $1,000,000 upon completion of the specified transfer plan in September 2010. In addition, the agreement provided us with the right to receive up to three milestone payments in an aggregate amount of up to $15,000,000 plus the reimbursement of certain related expenses, each conditioned upon the occurrence of particular events relating to the clinical development of certain assets that Biovail acquired. As part of the transaction, Biovail licensed back to us certain exclusive and irrevocable rights to some acquired AMPAKINE compounds, other than CX717, an injectable dosage form of CX1739, CX1763 and CX1942, for use outside of the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. Accordingly, following the transaction with Biovail, we retained rights for the majority of patented compounds in our AMPAKINE drug library, as well as all rights to the non-acquired AMPAKINE compounds for the treatment of neurological diseases and psychiatric disorders that have historically been a focus of our portfolio. Additionally, we retained our rights to develop and commercialize AMPAKINE compounds as a potential treatment for sleep apnea disorders, including an oral dosage form of CX1739.

In September 2010, Biovail s parent corporation combined with Valeant Pharmaceuticals International in a merger transaction and the combined company was renamed Valeant Pharmaceuticals International, Inc., or Valeant. Following the merger, Valeant and Biovail conducted a strategic and financial review of the product pipeline and, as a result, in November 2010, Biovail announced its intent to exit from the respiratory depression project acquired from us in March 2010.

Following that announcement, we immediately entered into discussions with Biovail regarding the future of the respiratory depression project. In March 2011, we entered into a new agreement with Biovail to reacquire the AMPAKINE compounds, patents and rights that Biovail acquired from us in March 2010. The new agreement included an upfront payment by us of $200,000 and potential future payments of up to $15,150,000 based upon the achievement of certain development and New Drug Application submission and approval milestones. Biovail is also

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eligible to receive additional payments of up to $15,000,000 based upon our net sales of an intravenous dosage form of the compounds for respiratory depression.

In addition, at any time following the completion of Phase I clinical studies and prior to the end of Phase IIa clinical studies, Biovail retains an option to co-develop and co-market intravenous dosage forms of an AMPAKINE compound as a treatment for respiratory depression and vaso-occlusive crises associated with sickle cell disease. In such an event, we would be reimbursed for certain development expenses to date and Biovail would share in all such future development costs with us. If Biovail makes the co-marketing election, we would owe no further milestone payments to Biovail and we would be eligible to receive a royalty on net sales of the compound by Biovail or its affiliates and licensees. Following the execution of our new agreement with Biovail in March 2011, Biovail was renamed Valeant International (Barbados) SRL.

For the years ended December 31, 2010 and 2009, our research and development expenses were approximately $3,739,000 and $4,598,000, respectively, with the timing of clinical expenses for CX1739 contributing to the reduction in our research and development expenses during the year ended December 31, 2010.

We face a number of risks in moving our technology through research, development and commercialization. We have never had revenues from commercial sales, have never been profitable on an annual basis before the year ended December 31, 2010 and have incurred cumulative net losses from inception through June 30, 2011 of approximately $116,048,000. We do not anticipate profitability in 2011 or in the short-term thereafter, and will continue to require external funding, from key corporate partnerships and licenses of our technology or from the private or public equity markets, debt from banking arrangements or some combination of these financing vehicles. As of yet, neither we nor any of our corporate partners have obtained regulatory approval to market any of our products. All of these risks, and others, are described in Risk Factors starting on page 4. Our executive offices are located at 15241 Barranca Parkway, Irvine, California 92618, and our telephone number is (949) 727-3157.

Our website is www.cortexpharm.com. We make available free of charge through our website 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 practicable after such material is electronically filed with the Securities and Exchange Commission. The contents of our website are not incorporated by reference into this prospectus.

**AMPA Receptor Modulator Program**

In June 1993, we licensed a new class of molecules and technology, the AMPAKINE technology, from the University of California. We have subsequently been working to develop and patent new AMPAKINE molecules and to demonstrate efficacy and safety in a number of potential indications.

AMPAKINE compounds facilitate the activity of the AMPA receptor, which is activated by the endogenous neurotransmitter glutamate. The AMPAKINE compounds interact in a highly specific manner with the AMPA receptor, lowering the amount of neurotransmitter required to generate a response, and increasing the magnitude and/or duration of the response to any given amount of glutamate. We believe that this selective amplification of the normal glutamate signal may eventually find utility in the treatment of neurological and psychological diseases and disorders characterized by depressed functioning of brain pathways.

Our AMPAKINE technology is composed of two groups of compounds that we have designated as low impact and high impact. Compounds from these two groups bind at different sites on the AMPA receptor complex and affect the subsequent cellular responses in different ways. Both types of compounds positively modulate the AMPA receptor function; low impact compounds generally increase the amplitude of the neuronal action potential, while the high impact compounds increase both the amplitude and the half-width of the neuronal action potential. Additionally, high impact compounds activate the expression of certain genes in the neuron, including the production of certain growth factors such as Brain-Derived Neurotrophic Factor, or BDNF. BDNF mediates the differentiation and survival of neurons by providing the necessary trophic support, and modulates synaptic transmission and plasticity. We believe that this action of AMPAKINE molecules imparts these compounds with the potential for disease-modifying activity, since deficits in BDNF have been observed in psychiatric diseases

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such as anxiety and depression, and in neurodegenerative disease such as Alzheimer s disease, Huntington s disease, Parkinson s disease, and Rett s syndrome.

The vast majority of excitatory synaptic connections in the brain utilize glutamate, and those synaptic connections decline with age. Thus, brain disorders associated with aging may be amenable to treatment with AMPAKINE compounds. Such disorders include MCI, Alzheimer s disease and Parkinson s disease. Schizophrenia, depression and other psychiatric disorders may involve imbalances of neurotransmitters in the brain, such as dopamine, serotonin, acetylcholine and norepinephrine. Given that glutamate modulates many of these other neurotransmitters, it may play a role in the rebalancing of neurotransmission.

We continue to design, synthesize and test new AMPAKINE molecules. Significant progress has been made with both our low impact and high impact programs, resulting in the recent allowance of patents that will provide patent protection for CX1739 and other AMPAKINE compounds into 2028. Similarly, additional compounds are included in filed patent applications that, if granted, will provide patent protection into 2028 for such molecules.

**Low Impact AMPAKINE Platform**

Following the reacquisition of our assets from Biovail in March 2011, our most advanced low impact AMPAKINE compounds are CX717 and CX1739, both of which are in Phase II clinical development.

***CX717***

Our Phase I safety trials provided evidence of safety for doses of up to 1,600mg of CX717 in single doses and up to 800mg of the drug given twice daily for ten (10) days in 104 human subjects. The pharmacokinetic results to date from the volunteers who have taken CX717 show that the half-life of the drug averages 9 hours, and the amount of drug absorbed over the range of 25mg to 1600mg was linear and predictable. Very high plasma drug levels were found in the volunteers, indicating an excellent absorption profile for the drug. CX717 exhibited an excellent safety profile in normal volunteers.

Several Phase II studies have been completed with CX717, including two sleep deprivation studies and a study in adults with ADHD. A positron emission tomography (PET) scan study with the compound in patients with Alzheimer s disease was closed following the sale of the compound to Biovail in March 2010. As indicated above, we reacquired rights to CX717 from Biovail in March 2011.

Additionally, two Phase II studies undertaken in 2008 were conducted in Germany and examined the effect of CX717 on the respiratory depression induced by the opiate agonist, alfentanil. The first study, RD-01, was a single dose, randomized, double-blind, placebo-controlled, two-period crossover design in 16 healthy subjects. The primary study objective was to determine if CX717 can prevent respiratory depression while preserving the underlying desired analgesic effect of alfentanil. Currently available opioid reversal agents, such as naloxone (Narcan®), also eliminate the pain relieving effect of opioids, which is a major drawback to their use in a post-surgery setting.

Top-line data from the RD-01 study demonstrated that a single oral dose of 1500mg of CX717 achieved statistical significance (p=0.005) over placebo on the primary endpoint measure of spontaneous basal respiration without affecting the pain relieving effects of alfentanil. The degree of reversal of the basal respiratory rate was similar to that obtained with the opioid antagonist, naloxone. The analgesic properties of alfentanil were maintained in an acute pain model in the presence of CX717, whereas alfentanil s pain relieving properties were fully blocked by naloxone.

The second study, RD-02, was a randomized, double-blind, placebo-controlled, two-period crossover design in 24 healthy subjects with three doses of CX717 (8 subjects/dose). The objective of the study was to determine an optimal dose for the prevention of respiratory depression in humans. Top-line results from this study demonstrated that a single dose of either 900mg or 2100mg of CX717 has positive effects on respiratory depression induced by pain relieving opiates. Procedural difficulties were encountered in the 1500mg dose group that prevented a reliable measure of the primary endpoint. The primary performance measures for the study were derived from a

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$CO_2$ re-breathing procedure that measured the breathing response of the subject to increased $CO_2$ levels in the presence of alfentanil. The primary measure, the minute expiratory volume at 55mgHg $CO_2$ ($V_E55$), was reversed by 900mg and 2100mg of CX717 in comparison to placebo ($p<0.04$ and $p<0.03$, respectively).

In early 2006, we reported that a three-week treatment with CX717 reduced symptoms of ADHD in adult patients. Forty-nine patients with ADHD completed the randomized, double-blind, placebo-controlled, two-way crossover design study. The primary outcome measure was the ADHD Rating Scale, which evaluates both the inattentiveness and hyperactivity symptoms. The overall ADHD Rating Scale score showed positive statistical changes in the ADHD Rating Scale scores ($p<0.002$) in the 800 mg twice daily dose group of 22 patients and also statistically significant effects on the hyperactivity subscale ($p<0.01$) and the inattentiveness subscale ($p<0.03$) compared to placebo. The 200 mg twice daily dose, tested in a group of 27 patients, did not show a significant effect. However, while the ADHD-RS values did not separate from the placebo values at the lower dose, they did show a trend for improvements in the ADHD-RS as dosing progressed from week 1 to week 3. CX717 was well tolerated, and there were no serious adverse events or other significant safety concerns with either dose.

***Regulatory Issues with CX717***

In late March 2006 the Neurology Division of the FDA notified us that it was placing CX717 on clinical hold due to concerns related to some preclinical animal toxicology data. After submitting a response to the Agency in September 2006, the clinical hold was lifted in October 2006, but the FDA limited the approved dosage levels of the compound. Those dosing limitations impacted our plans to conduct further clinical testing of CX717. We submitted additional data to the Neurology Division in April 2007 that demonstrated that the animal toxicity issues were postmortem, fixative-induced effects. In July 2007, the Neurology Division removed the dosing restrictions, and allowed us to resume our clinical trial with CX717 in Alzheimer s disease at all dose levels requested prior to the hold being placed on the compound.

In September 2007 we submitted a Notice of Claimed Investigational Exemption for a New Drug, or an IND, to the Division of Psychiatry Products of the FDA to allow us to proceed with longer term human clinical studies of CX717 for ADHD. In October 2007, the Division rejected our IND application. At this time, we do not anticipate submitting further data to the Agency for CX717 as a treatment for ADHD, but we continue to advance additional preclinical AMPAKINE compounds such as CX1739 that may be a potential therapy for the indication.

The data developed during the additional toxicology studies conducted during 2006 and 2007 clearly demonstrated that the postmortem toxicology artifacts seen with CX717 did not occur with short dosing periods, but were found only after chronic dosing at very high dose levels in animals. We believe that by developing an acute use for CX717 we can mitigate any perceived risks associated with chronic doses of the compound. The risk/benefit ratio for the treatment of patients with life-threatening disorders, such as respiratory depression, is significantly different than that for the treatment of ADHD.

***CX1739***

CX1739 completed pre-clinical safety and toxicology studies in 2008 and, importantly, the toxicological artifact previously observed in animals with CX717 was not seen with CX1739. Phase I clinical studies with CX1739 were initiated in 2008 and completed in early 2009. In the Phase I clinical studies, the safety and tolerability of CX1739 was evaluated in 80 healthy, male volunteers. No changes were seen in vital signs, and there were no cardiovascular changes or changes in blood chemistry at any of the doses tested, including single doses of up to 1200mg and doses of 600mg twice-a-day (for a 1200mg total daily dose) for 7 days. The maximum well-tolerated single dose was identified at 900mg and 450 mg twice-a-day (for a 900mg total daily dose) for 7 days.

The pharmacokinetic results to date from the volunteers who have taken CX1739 show that the half-life of the drug averages 7.2 hours, and the amount of drug absorbed over the range of 50mg to 1200mg was linear and predictable. Very high plasma drug levels were found in the volunteers, indicating an excellent absorption profile for the drug. In summary, CX1739 exhibited an excellent safety profile in healthy male volunteers.

Given the positive results previously demonstrated with CX717 in adults with ADHD, we plan to commence a Phase II study with CX1739 as a potential treatment for ADHD.

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In early 2009, we initiated a Phase IIa study with CX1739 in a randomized, double-blind, placebo-controlled study in 20 subjects with moderate to severe obstructive sleep apnea in the UK. Sixteen of the subjects received a single oral dose of CX1739 and 4 subjects received matching placebo for one night. The objective of the study was to explore the safety and tolerability of the compound in the sleep apnea population and to assess the efficacy of CX1739 on a range of sleep apnea parameters assessed by overnight polysomnography. Enrollment in the study was slower than expected due to several factors, including variability in sleep apnea scores, fairly strict enrollment criteria and financial constraints.

In February 2011, we announced top-line results from the study that demonstrated that a single dose of CX1739 improved a number of sleep apnea parameters across most of the patients who were given the drug. CX1739 did not reduce the mean apnea/hypopnea index (AHI; frequency of apnea or hypopnea events per hour of sleep), but three subjects (20%) treated with CX1739 were deemed responders with a more than 40% reduction in the AHI and there were no such AHI responders in the placebo group. Five subjects (30%) in the CX1739 treatment group were deemed responders with a more than 40% reduction in the apnea/hypopnea time (AHT; cumulative time of all apneas and hypopneas over the night), with no such AHT responders in the placebo group. There were also statistically significant improvements in a number of blood oxygenation measurements.

Sleep efficiency, the percent of time asleep while in bed for the eight hour session, was significantly reduced by about 20% after administration of CX1739, but the level of daytime sleepiness, determined by the Clinical Global Impressions Daytime Vigilance test given the morning following treatment, was unaffected by CX1739.

CX1739 was safe, but the dose appeared to be near the limits of tolerability. There were no serious adverse events and no clinically relevant changes in vital signs, cardiovascular of other safety assessments.

We believe that the results from this study merit conducting a larger study to better understand the sleep apnea population that may be most responsive to the treatment with CX1739. We may find that repeated daily treatment with CX1739 for several weeks may provide benefit over a single dose and improve symptoms of sleep apnea in those subjects who did not respond after a single dose.

***Other Low Impact Compounds***

In-house research activities have led to the identification of a chemically distinct series of low impact AMPAKINE molecules, and in 2008 we filed an application for patent protection for the core scaffold of these molecules. The lead molecules in this series, CX2007 and CX2076, have successfully undergone initial early preclinical testing, and subject to the availability of sufficient finances, additional resources will be invested in selecting a lead compound from this series for further preclinical and clinical development activities. If the related application is approved, we will have patent protection for this compound series into 2028.

**High Impact AMPAKINE Platform**

Several of our high impact compounds have been tested in animal behavioral models. In genetic mouse models of Huntington s disease, the high impact molecule CX929 has demonstrated the potential to restore depressed levels of the growth factor BDNF, and improve deficits in a process known as long-term potentiation, a cellular mechanism thought to underlie learning and memory. Furthermore, treatment of these mice with CX929 resulted in an improvement in motor deficits that occur in non-treated mice. This preclinical data suggests that high impact AMPAKINE molecules might have beneficial effects in patients with Huntington s disease.

We have also looked at the effect of AMPAKINE molecules on two different genetically altered mouse models of central nervous system disease: Rett syndrome and Fragile X syndrome. The Rett syndrome mice exhibit many of the same characteristics as the disease that occurs in girls. One aspect of the disease, the irregular breathing patterns with bouts of apnea, is a disturbing aspect of the disease in patients that is also seen in the genetically altered mice. We have found that AMPAKINE molecules can restore the breathing pattern of Rett syndrome mice to a more normal, regular breathing pattern. With regard to mice that demonstrate characteristics of Fragile X syndrome, the current data suggests that AMPAKINE molecules, such as CX929, augment levels of the growth factor BDNF,

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which could be valuable for correcting abnormalities in dendritic spines and synaptic function associated with Fragile X syndrome.

As noted under the caption Risk Related to Our Business under the Risk Factors section, we are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies, and there are certain risks related to the development and commercialization of our products, including, without limitation, risks related to our clinical trials.

**Potential Applications for AMPAKINE Compounds**

*ADHD*

ADHD is a common psychiatric disorder in both children and adults. The National Institute of Mental Health, or the NIMH, estimates that ADHD affects three to five percent of school-age children, with about one child in every classroom in the U.S. in need of help for this disorder. ADHD is characterized by inattentiveness, poor impulse control and hyperactivity. Although the disorder has historically been thought of as a childhood illness, longitudinal studies have documented the persistence of symptoms into adulthood in a large percentage of individuals that suffered ADHD as children. The prevalence of ADHD in adults is estimated at between two to four percent. ADHD exacts a significant toll on social relationships, education, and vocational attainment.

Psychostimulants, including amphetamine and methylphenidate, represent the most widely researched and commonly prescribed treatments for ADHD. Based upon research data from IMS Health, psychostimulants accounted for a global market of approximately $5 billion in 2008. Given the availability and frequent prescribing of psychostimulants, concerns over their potential overuse and abuse have intensified. In addition to the potential for abuse with psychostimulants, the use of psychostimulants may result in side effects. According to the National Institutes of Health, some children on these medications may lose weight, have less appetite and temporarily grow more slowly, whereas others may experience problems falling asleep. Given the lack of consistent improvement beyond the disorder s core symptoms and the deficit of long-term studies conducted, the need remains for additional testing with medications and behavioral treatments. Most of the psychostimulants also carry black box warnings related to the cardiovascular risks associated with the increases in blood pressure and heart rate caused by these agents.

We believe that AMPAKINE compounds, such as CX1739, may represent a novel, non-stimulant approach for treating ADHD patients.

*Alzheimer s Disease and Mild Cognitive Impairment*

Impairment of memory and cognition is a significant health care problem that grows as the elderly population continues to increase. Dementia can be diagnosed in those individuals who develop persistent memory and cognitive deficits as well as in those individuals who suffer from difficulties in their social, occupational and other activities of daily living. With advanced dementia, many elderly individuals become confined to nursing homes because of psychological disorientation and profound functional difficulties. Pharmaceuticals used to alleviate deficits in memory and cognition could potentially enable elderly individuals with dementia to regain some functional abilities that may help them remain independent longer, which may result in an improved quality of life and substantial savings in health care costs.

Alzheimer s disease is the most common form of dementia, currently afflicting approximately four million people in the U.S. and 12 million people worldwide. Unless a treatment for Alzheimer s disease is found, the number of people in the U.S. with the disease is expected to reach 14 million by the middle of this century. According to the Alzheimer s Association, the U.S. spends at least $100 billion a year on costs associated with Alzheimer s disease, at an average lifetime cost per patient of $174,000. Medicare and most private health insurance will not cover all costs associated with the long-term care of an Alzheimer s patient. Accordingly, an effective treatment, even a symptomatic one, likely will have an enormous impact.

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We believe that during the early to middle stages of Alzheimer s disease AMPAKINE molecules may play a valuable role in enhancing the effectiveness of the brain cells and brain circuits that have not yet succumbed to the disease. The enhancement AMPAKINE molecules may provide may help to alleviate the memory and cognitive deficits that constitute the major symptoms of Alzheimer s disease.

There is also a possibility that treatment with high impact AMPAKINE compounds may slow the progression of Alzheimer s disease. Brain cells, or neurons, require continued input from other brain cells to remain alive. As neurons die, other neurons begin to lose their inputs, hastening their own death. AMPAKINE compounds may slow the rate at which functional levels of input from other neurons are lost. In animal models, selected AMPAKINE compounds have been shown to increase the production of BDNF, which is a protein associated with the formation of synapses by neurons. This possible mode of action may also prove beneficial to patients with Alzheimer s disease, although it has not been demonstrated whether the same mechanism may produce similar results in humans.

Patients with MCI represent the earliest clinically-defined group that have memory impairment beyond the level expected for normal individuals of the same age and education, but do not meet the clinical criteria for Alzheimer s disease.

It is estimated that there are between three and four million people with MCI. The memory deficits in the MCI population are clinically discernible and can interfere with daily functioning. MCI patients also appear to have a greatly increased risk of developing Alzheimer s disease; whereas approximately one to two percent of the normal elderly population will be diagnosed with Alzheimer s disease every year, 10-15% or more of MCI patients will progress to Alzheimer s disease per year.

Given the lack of consensus by the FDA on the diagnostic and outcome for success in MCI, we believe that the AMPAKINE compounds must first demonstrate efficacy in treating Alzheimer s disease before undertaking studies to determine the efficacy of the compounds in MCI. Yet, given the potential size of the MCI market, we remain interested in this indication.

*Depression*

It is estimated that major depression affects over 18.8 million people in the U.S. and over 121 million people worldwide, with approximately 20% of the global population at risk of developing major depression at some point in their lives. Women are almost twice as likely to suffer from depression as men (9.5% versus 5.8%), but prevalence figures vary from country to country. Depression costs the U.S. an estimated $44 billion each year. The World Health Organization predicts depression will become the leading cause of disability by the year 2020.

In the U.S., the depression market is considered the largest segment of the central nervous system market with global sales in excess of $20 billion in 2008. This is a mature market with a number of the leading brands facing patent expiration in the next five to six years.

The primary drug therapy for depression is the use of selective serotonin reuptake inhibitors, or SSRIs, such as Prozac, Zoloft, Paxil, Celexa and Lexapro. In addition, dual reuptake inhibitors that also affect norepinephrine, or SNRIs, such as Cymbalta, Effexor and Pristiq, are also commonly prescribed. However, these antidepressant molecules only work for 30% to 45% of the depressed population, and all antidepressants acting via the monoaminergic pathways have received a black box warning from the FDA for suicidality. There is much room for improvement in developing new antidepressants, such as improved efficacy, a faster onset of action (current treatments require 4-6 weeks to see efficacy), and fewer side effects (current treatments produce sexual dysfunction, weight gain, gastrointestinal and sleep disturbances).

AMPAKINE molecules have demonstrated efficacy comparable to that of SSRI and tricyclic antidepressants in animal models of depression such as the forced swim and tail suspension tests, both models of behavioral despair. AMPAKINE compounds also produced synergistic effects when combined with clinically effective antidepressants. In the mouse forced swim test, an ineffective dose of the AMPAKINE significantly augmented the potency of several other antidepressant compounds. These observations of synergy are consistent with the idea that

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AMPAKINE molecules produce their antidepressant-like effects through a mechanism that, although distinct, ultimately converges upon a common final pathway.

Although the SSRIs and SNRIs are widely used today, there is clearly room in the market for new therapies that act via different mechanisms that may address treatment-resistant patients, have a faster onset of action, and do not have the same side-effect profiles.

*Schizophrenia*

The worldwide incidence of schizophrenia is approximately one percent of the population, regardless of ethnic, cultural or socioeconomic status. Schizophrenia typically develops in late adolescence or early adulthood and involves a collection of symptoms. These are generally characterized as positive symptoms (delusions and hallucinations), negative symptoms (social withdrawal and loss of emotional responsiveness) and cognitive symptoms (disordered thought and attention deficits).

The first conventional anti-psychotics for schizophrenia were developed in the 1950s and 1960s. These drugs helped to reduce the positive symptoms of the disease and greatly reduced the need for chronic hospitalization but can be difficult to use because of safety and tolerability issues. Newer agents achieve good control of positive symptoms, partial control of negative symptoms and better patient compliance with medication due to lower frequency of side effects. However, clinicians agree that there are still substantial side effects and that the cognitive symptoms of schizophrenia are not greatly improved by any available agent. The persistence of cognitive symptoms prevents many patients from successfully reintegrating into society.

Schizophrenia has long been thought to have its biochemical basis in an over-activity of dopamine pathways projecting into an area of the brain known as the striatum. More recently, a developing body of evidence suggests that schizophrenia also involves reduced activity of glutamate pathways projecting into the same area. We began studying whether AMPAKINE compounds, which increase current flow through the AMPA subtype of glutamate receptor, might have relevance to the treatment of schizophrenia.

In animal models where cognitive function is impaired by agents known to produce schizophrenia-like symptoms in humans, AMPAKINE compounds restore cognitive deficits, suggesting that in schizophrenia patients AMPAKINE compounds may improve the cognitive deficits when combined with current antipsychotic therapies.

*Respiratory Depression*

Respiratory depression represents a potentially life-threatening condition resulting from analgesic, hypnotic and anesthesia medications. The condition results in a depression of breathing that causes a reduced availability of oxygen to vital organs.

Respiratory depression is a leading cause of death from the overdose of some classes of abused drugs, but the condition also may arise during typical physician-supervised procedures such as surgical anesthesia, post operative analgesia and as a consequence of normal out-patient management of pain from illnesses or injuries. Events also may occur when two or more central nervous depressants are taken together or when prescribed drugs are taken in ways not intended by the physician. Sleeping disorders like sleep apnea are another predisposing factor for respiratory depression. Recent research estimates that the treatment market for respiratory depression may be approximately $1.2 billion in the U.S. alone.

Our own market research suggests that respiratory depression may occur during 10% to 15% of surgical procedures and some of these respiratory depression events lead to death. The primary drug classes responsible for these effects are opiates and barbiturates. Opiates include standard pain medications such as morphine, fentanyl and codeine, along with vicodin, hydrocodone and oxycontin. Barbiturates include sedative drugs such as pentobarbital.

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Currently, the only pharmacological method to counter respiratory depression induced by opiates is to administer opiate receptor antagonists such as naloxone (Narcan®), but those antagonists eliminate the desired analgesic activity of drugs administered for severe pain relief, which is a major drawback for using those agents. The non-pharmacological treatment for respiratory depression is to sedate then intubate the patient, and connect them to an artificial respirator until unaided breathing can be maintained.

In May 2007, we entered into an exclusive patent license agreement with the University of Alberta to potentially broaden the use of our AMPAKINE technology to prevent and treat opiate- and barbiturate-induced respiratory depression. The related patent application filed by Dr. John Greer of the University of Alberta describes a method by which an AMPAKINE compound can reverse the respiratory depression associated with classes of commonly prescribed opiate analgesics and barbiturates. In August 2011, we announced the receipt of a notice of allowance for this patent from the U.S. Patent and Trademark Office.

Dr. Greer has demonstrated in animal models that the respiratory depression induced by these agents can be reversed or prevented with an AMPAKINE, without a reduction of pain relief or sedation. We believe that this creates the opportunity to use an AMPAKINE compound in conjunction with commonly prescribed barbiturates or opiates to reduce the mortality caused by these adverse reactions. Preliminary animal data also suggests that an AMPAKINE compound may also reverse the respiratory depression effects of propofol (Diprivan®), a commonly used intravenous anesthetic agent.

*Sleep Apnea*

Sleep apnea is a serious disorder in which breathing repeatedly stops long enough to disrupt sleep, and temporarily decrease the amount of oxygen and increase the amount of carbon dioxide in the blood. Sleep apnea is defined by more than five periods per hour of ten seconds or longer without breathing. The most common type of sleep apnea is obstructive sleep apnea, which occurs by repetitive narrowing or collapse of the pharyngeal airway during sleep. Central sleep apnea, a much rarer type, is caused by a problem with the control of breathing in the brain (which is accomplished in the brain stem). Mixed sleep apnea, the third type, is a combination of central and obstructive factors occurring in the same episode of sleep apnea. Sleep apnea is often made worse by central nervous system depressants such as alcohol and opioid analgesics.

The repetitive cessation of breathing during sleep has substantial impact on the affected individuals. The disorder is associated with major co-morbidities including excessive daytime sleepiness and increased risk of cardiovascular disease, diabetes and weight gain. It is therefore important for these patients to seek therapy. However, there is currently no approved pharmacotherapy, and the most common treatment is to use continuous positive airway pressure, or CPAP, delivered via a nasal or full-face mask, as long as patients are able to tolerate the treatment. It is estimated that in more than 50% of cases, patients stop using the CPAP device on a regular basis. Given the large patient population of greater than 17 million in the U.S. alone, and a lack of suitable treatment options, there is a very large opportunity for pharmacotherapy to treat this disorder.

Data obtained from animal studies have demonstrated that AMPAKINE compounds can specifically stimulate breathing by activating regions in the brain stem. Our hypothesis is that by stimulating breathing and increasing muscle tone in the upper airways, CX1739 will be effective in maintaining breathing throughout the night in sleep apnea patients.

*Other Indications*

We may conduct studies in various other indications that have not been discussed above. In recent years, we have developed a number of new patent applications for new composition of matter patents for both high and low impact compounds. If these applications are granted, they will provide patent protection for our new AMPAKINE molecules into 2028.

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**Manufacturing**

We have no experience or capability to either manufacture bulk quantities of the new compounds that we develop, or to produce finished dosage forms of the compounds, such as tablets or capsules. We rely, and presently intend to rely, on the manufacturing and quality control expertise of contract manufacturing organizations or current and prospective corporate partners. There is no assurance that we will be able to enter into manufacturing arrangements to produce bulk quantities of our compounds on favorable financial terms. There is, however, substantial availability of both bulk chemical manufacturing and dosage form manufacturing capability in the U.S. and international pharmaceutical industry that we believe that we can readily access.

**Marketing**

We have no experience in the marketing of pharmaceutical products and do not anticipate having the resources to distribute and broadly market any products that we may develop for indications such as Alzheimer s disease and ADHD. We will therefore continue to seek commercial development arrangements with other pharmaceutical companies for our proposed products for those indications that require significant sales forces to effectively market. In entering into such arrangements, we may seek to retain the right to promote or co-promote products for certain of the Orphan Drug indications in North America. We believe that there is a significant expertise base for such marketing and sales functions within the pharmaceutical industry and expect that we could recruit such expertise if we pursue to directly market a drug. With respect to Orphan Drugs, we may distribute and market such products directly.

As noted under the caption Risk Related to Our Business under the Risk Factors section, we are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies, and there are certain risks related to the development and commercialization of our products.

**Technology Rights**

In 1993, we entered into an agreement with the Regents of the University of California, or the University, under which we secured exclusive commercial rights to AMPA-receptor modulating technology and compounds (the AMPAKINE technology) for the treatment of deficits of memory and cognition. The relationship later was expanded to include additional agreements for other indications. We paid an initial license fee and are obligated to make additional payments, including license maintenance fees and patent expense reimbursements creditable against future royalties, over the course of initiating and conducting human clinical testing and obtaining regulatory approvals. When and if sales of licensed products commence, we will pay royalties on net sales. During the fiscal year ended June 30, 2003, we amended the agreement with the University to exclude the treatment of disease areas outside of the central nervous system that we would not have the resources or the capability to develop in a timely manner.

Additionally, in connection with our March 2010 transaction with Biovail, with our consent, the University and Biovail entered an agreement to provide Biovail with non-exclusive commercial rights to the AMPAKINE technology for use for the treatment of respiratory depression or vaso-occlusive crises associated with sickle cell disease. As a result of our transaction with Biovail in March 2010, we incurred certain license fees payable to the University. In March 2011, when we reacquired the compounds and rights that we earlier sold to Biovail the non-exclusive commercial rights provided to Biovail by the University were terminated. Of the patents licensed from the University, the date for the last to expire issued patent is January 2025.

As noted under the caption Risk Related to Our Business under the Risk Factors section, our products rely on licenses from research institutions, and if we lose access to these technologies, our business would be substantially impaired.

**Patents and Proprietary Rights**

We are aggressively pursuing patent protection of our technologies. We own or have exclusive rights (within our areas of product development) to more than 25 patent families comprising over 250 issued or allowed

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U.S. and foreign patents and over 200 additional U.S. patent applications and their international counterparts pending. These patents form the foundation of our business and the pharmaceutical industry in general. Additionally, we are consistently filing new disclosures and patents for new structures and new uses, and in 2008 we filed new patent applications covering hundreds of new compounds. If these applications are granted as filed, they will provide patent protection for our new molecules into 2028.

One of our licensed patents covers the method of use for our AMPAKINE compounds as well as compounds made by others and describes the mechanism by which AMPAKINE compounds may affect the treatment of memory and cognition. This patent was issued to the University in the U.S. in 1999, and provides protection through 2016. We believe that this patent provides coverage in the U.S. that extends to both neurological disorders such as Alzheimer s disease as well as psychiatric conditions with cognitive disturbances including depression, obsessive compulsive disorder and phobic disorders. Similar method of use patents have been issued in Mexico, Australia and New Zealand and we have licenses to such patents.

In November 2003, a similar patent, licensed by us, was issued to the University by the European Patent Office, or the EPO, that provides protection through 2013. Upon issuance of the patent, an opposition was filed by Eli Lilly and Company and in August 2004, an opposition also was filed by GlaxoSmithKline. In cooperation with the University, we responded to the oppositions. At an oral hearing in January 2008, the EPO decided to revoke this patent. One of the reasons cited for the revocation was a filing technicality related to matter added to the original patent application. The EPO decided that the parent application as filed did not provide sufficient basis for several terms that appeared in the final claims of the patent. We subsequently filed a formal appeal of the EPO s decision, which halted the revocation. The patent was scheduled to expire in 2013 and the legal process related to the appeal continued for most of the remaining life of the patent, until we withdrew our appeal in July 2011 and the revocation became effective. Given the patent s limited life for commercial protection, we do not deem the revocation of this patent as material to the future of the AMPAKINE technology.

Another method of use patent licensed by us contains a broad claim for any AMPA-modulating compound to treat schizophrenia. This patent was issued to the University in the U.S. in 1998, and subsequently has been issued in Australia. An additional method of use patent containing a broad claim for any AMPA-modulating compounds combined with antipsychotic medications to treat schizophrenia has issued in Europe. However, in December 2006 we were notified by the EPO that oppositions to this patent were filed by Eli Lilly and Company and another by GlaxoSmithKline. In April 2007, we submitted our written response to the EPO to counter these objections. An oral hearing was held in October 2008. The EPO ruled in our favor, to maintain the claims of the patent. However, both opponents filed a formal appeal to the EPO s decision. The patent remains enforced throughout the appeal process, and would continue to provide protection through 2018, unless during the appeal process, the patent is overturned. There is no timeframe available for a decision from the EPO. As a result, the process to determine whether the oppositions filed for this patent will or will not prevail in Europe may take several years to resolve. We do not believe that the European decision for this patent is material to the future of our AMPAKINE technology given the patent s limited life for commercial protection.

In August 2011, we announced the receipt of a notice of allowance from the U.S. Patent and Trademark Office for the patent filed for the use of AMPAKINE compounds for the prevention or treatment of respiratory depression. This patent, licensed exclusively to us by the University of Alberta, broadly covers all AMPAKINE compounds, including competitor compounds, and provides patent protection into 2027.

Most importantly, we own or have exclusive rights to a large portfolio of composition of matter patents or pending patent applications that we believe are fundamental to pharmaceuticals in general and more critical to our commercial protection worldwide. AMPAKINE CX717 is included in a composition of matter patent issued in the U.S. that will expire in February 2017 and in similar patents issued or pending in countries throughout the world that will expire in February 2018.

CX1739 is included in composition of matter claims in pending applications filed in the U.S. and worldwide. In April 2011, we announced receipt of a notice of allowance for the patent from the U.S. Patent and Trademark Office that will provide patent protection for CX1739 into May 2028. This patent application has been filed broadly in major markets, and patent prosecution in these other countries continues. If the related patents issue, this patent family also would expire in May 2028.

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CX2007 and CX2076, part of a chemically distinct series of low impact AMPAKINE compounds, are included in other patent applications filed in the U.S. and worldwide. If issued, this patent family would expire in August 2028.

Similarly, our high impact AMPAKINE, CX929, is included in a composition of matter patent issued in the U.S. and in pending applications filed worldwide. The patent issued in the U.S. and the patents for the worldwide applications, if issued, would expire in November 2022.

Furthermore, because patent rules and regulations, and burden of proof requirements differ substantially between the U.S. and Europe, specifically in regards to the revocation reason cited by the EPO above, we believe that the decision by the EPO is not likely to impact the patents that have issued in the U.S.

Our rights under the University patents are contingent upon us making certain minimum annual payments to the University, meeting certain milestones and diligently seeking to commercialize the underlying technology. Over the past five years, we believe that we have demonstrated such diligence.

Since issuance of a patent does not guarantee the right to practice the claimed invention, others may obtain patents that we would then need to license or design around in order to practice our patented technologies. We may not be able to obtain licenses that might be required to practice these technologies due to patents of others on reasonable terms or at all. Additionally, any unpatented manufacture, use or sale of our technology, processes or products may infringe on patents or proprietary rights of others, and we may be unable to obtain licenses or other rights to these other technologies that may be required for commercialization of our proposed products or processes.

Also, we rely to a certain extent upon unpatented proprietary technology and may determine in some cases that our interests would be better served by reliance on trade secrets or confidentiality agreements rather than patents.

As noted under the caption Risk Related to Our Industry under the Risk Factors section, if we fail to secure adequate intellectual property protection, it could significantly harm our financial results and ability to compete.

**Government Regulation**

In order to test, produce and market human therapeutic products in the U.S., mandatory procedures and safety standards established by the FDA must be satisfied. Obtaining FDA approval is a costly and time-consuming process. We have initiated Phase I and early Phase II testing in the U.S. and Europe. Some clinical trials were and are performed in the U.S. under Notices of Claimed Investigational Exemption for a New Drug, or IND, filed with the FDA by our clinical collaborators. We filed an IND for CX717 and plan to file an IND for CX1739. It is our intent that Servier or another pharmaceutical company partner or partners that we are seeking, will pursue other required regulatory approvals to conduct further clinical testing with AMPAKINE compounds. However, we intend to file other IND s (and equivalent regulatory filings outside of the U.S.) for additional AMPAKINE compounds to facilitate the development of our Orphan Drug strategy.

Clinical trials are normally conducted in three phases. Phase I trials are concerned primarily with safety of the drug, involve fewer than 100 subjects, and may take from six months to over a year. Phase II trials normally involve a few hundred patients. Phase II trials are designed to demonstrate effectiveness and to determine optimal dosing in treating or diagnosing the disease or condition for which the drug is intended. Short-term side effects and risks in people whose health is impaired also may be examined. Phase III trials may involve up to several thousand patients who have the disease or condition for which the drug is intended, to approximate more closely the conditions of ordinary medical practice. Phase III trials also are designed to clarify the drug s benefit-risk relationship, to uncover less common side effects and adverse reactions, and to generate information for proper labeling of the drug. The FDA receives reports on the progress of each phase of clinical testing, and may require the modification, suspension, or termination of clinical trials if an unwarranted risk is presented to patients. The FDA estimates that the clinical trial period of drug development can take up to ten years, and typically averages six years.

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With certain exceptions, once clinical testing is completed, the sponsor can submit a New Drug Application for approval to market a drug. The FDA s review of a New Drug Application can also be lengthy.

Therapeutic products that may be developed and sold by us outside the U.S. will be subject to regulation by the various countries in which they are to be distributed. In addition, products manufactured in the U.S. that have not yet been cleared for domestic distribution will require FDA approval in order to be exported to foreign countries for distribution there. Also, as noted under the caption Risk Related to Our Industry under the Risk Factors section, the regulatory approval process is expensive, time consuming, uncertain and may prevent us from obtaining required approvals for the commercialization of some of our products.

We plan to seek additional financing to support our development of selected AMPAKINE compounds for Orphan Drug indications. Without such financing, we may be severely restricted in our overall development. We would be dependent upon our sub-licensees and might be unable to maintain our current core technical and management capabilities. Under such circumstances, we would be dependent upon entering into partnerships or other collaborative arrangements with third parties with the required resources to obtain the needed approvals. Along with our agreement with Servier, we intend to enter into license or other arrangements with other pharmaceutical companies under which those companies would conduct the required clinical trials and seek FDA approval for most or all of our proposed products. As noted under the caption Risks Related to Our Business under the Risk Factors section, there are certain risks related to the proposed strategic alliances we are seeking, as we may not be able to enter into the strategic alliances necessary to fully develop and commercialize our products and technologies, and we will be dependent on our corporate partners if we do.

**Competition**

The pharmaceutical industry is characterized by rapidly evolving technology and intense competition. Many companies of all sizes, including both major pharmaceutical companies and specialized biotechnology companies, are engaged in activities similar to ours. A large number of drugs intended for the treatment of Alzheimer s disease, MCI, schizophrenia, depression, ADHD and other neurological and psychiatric diseases and disorders are on the market or in the later stages of clinical testing. For example, approximately 15 drugs are in development in the U.S. for schizophrenia and over 25 drugs are under clinical investigation in the U.S. for the treatment of Alzheimer s disease. Most of our competitors have substantially greater financial and other resources and larger research and development staffs. Larger pharmaceutical company competitors also have significant experience in preclinical testing, human clinical trials and regulatory approval procedures.

In addition, colleges, universities, governmental agencies and other public and private research organizations will continue to conduct research. These institutions are becoming more active in seeking patent protection and licensing arrangements to collect license fees, milestone payments and royalties in exchange for license rights to technology that they have developed, some of which may be directly competitive with us.

We expect technological developments in the neuropharmacology field to continue to occur at a rapid rate and expect that competition will remain intense as those advances continue. Based on the technical qualifications, expertise and reputations of our Scientific Directors, consultants and other key scientists, we believe that our operating strategy to develop AMPAKINE compounds for the treatment of selected Orphan Drug indications and to out-license the technology to larger pharmaceutical companies for major chronic indications is appropriate.

**Product Liability Insurance**

The clinical testing, manufacturing and marketing of our products may expose us to product liability claims, against which we maintain liability insurance. As noted under the caption Risks Related to Our Industry of the Risk Factors section, there are certain risks to us related to product liability claims that may be brought against us.

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**Employees**

We currently have six full-time employees, including three Ph.D.-level or equivalent employees. Of the full-time employees, five are engaged in management and administrative support and one is engaged in research and development.

We believe that our number of employees is sufficient to meet our personnel requirements and we do not anticipate significant increases in our employee levels during the next twelve months. We will continue to outsource a substantial amount of our development activities to qualified vendors.

**Legal Proceedings**

Currently, no legal proceedings or claims are pending against or involve us.

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## MANAGEMENT

### Directors

The names of our directors and certain biographical information about them are set forth below:

| Name | Age | Director Since | Principal Occupation |
|---|---|---|---|
| Robert F. Allnutt [1][3] | 75 | 1995 | Senior Counselor, APCO Worldwide, Inc. |
| John F. Benedik [2][3] | 63 | 2005 | Retired Senior Partner, Arthur Andersen LLP |
| Charles J. Casamento [1][2] | 65 | 1997 | Principal and Executive Director, The Sage Group, Inc. |
| Carl W. Cotman, Ph.D. [4] | 71 | 1991 | Professor of Neurology and Neurobiology and Behavior, University of California at Irvine; Co-Founder, Scientific Director to the Company |
| Peter F. Drake, Ph.D. [2][3] | 57 | 2003 | Managing General Partner, Mayflower Partners |
| M. Ross Johnson, Ph.D. [1] [4] | 66 | 2002 | President and Chief Executive Officer, Parion Sciences, Inc. |
| Roger G. Stoll, Ph.D. | 69 | 2002 | Executive Chairman of the Company |
| Mark A. Varney, Ph.D. [4] | 45 | 2007 | President and Chief Executive Officer of the Company |

(1) Member of Compensation Committee
(2) Member of Audit Committee
(3) Member of Governance and Nominations Committee
(4) Member of Research and Development Committee

*Robert F. Allnutt* has been a director since December 1995 and served as Chairman of the Board from February 1999 until the appointment of Roger G. Stoll, Ph.D. in August 2002. Since February 1995, Mr. Allnutt has been a senior counselor for APCO Worldwide, Inc., a public affairs and strategic communications company. Mr. Allnutt was Executive Vice President of the Pharmaceutical Manufacturers Association, or PhRMA, from 1985 until 1995 and was Vice President for Governmental Relations of Communications Satellite Corporation from 1984 until 1985. Prior to 1984, Mr. Allnutt held numerous positions in the federal government for over 25 years, including 15 years at the National Aeronautics and Space Administration, or NASA, where he attained the position of Associate Deputy Administrator, the third highest ranking position in the agency headquarters. Mr. Allnutt has served as Vice Chair of the board of directors of the American Hospice Foundation and as a director of several pharmaceutical-related public and private companies, and of numerous charitable organizations including the National Health Council, the National Council on Aging, the National Medals of Science and Technology Foundation, and the NASA Alumni League. Mr. Allnutt holds a B.S. in Industrial Engineering from the Virginia Polytechnic Institute and J.D. (with distinction) and L.L.M. degrees from George Washington University.

We believe that Mr. Allnutt s qualifications to serve on the Board of Directors include valuable business and management insights based on his past experience as a senior staff member of PhRMA, along with his significant experience in both public and private health care organizations and his work within NASA, a federal agency, for 15 years. His broad range of experience and knowledge of the U.S. legal environment provides unique expertise and perspective as a member of the Board of Directors. Mr. Allnutt currently serves on both our Compensation Committee and our Governance and Nominations Committee.

*John F. Benedik* was appointed to our Board of Directors of the Company in December 2005. From 1970 to May 2003, Mr. Benedik worked at Arthur Andersen LLP, where he was admitted to the firm s partnership in 1980. During his tenure with Arthur Andersen LLP, Mr. Benedik held a number of positions, including Division Head for the Consumer Products and Services audit division of the New York area offices from 1994 to 1998, Managing Partner of the New Jersey office from 1999 to 2002 and Practice Director of the New York area offices from 1998 to 2002. From September 2002 to May 2003, Mr. Benedik was a Managing Director of Arthur Andersen

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LLP. Mr. Benedik served on the board of directors and the audit committee of the board of Aeroflex Incorporated, a global provider of high technology solutions to aerospace, defense, cellular and broadband communications markets, from June 2004 until it was acquired in August 2007 by Veritas Capital in a transaction valued at approximately $1.1 billion. He currently serves as a board member and treasurer of the American Conference on Diversity. Mr. Benedik, a retired Certified Public Accountant in New York and New Jersey, received a B.A. in English from Fordham College and an M.B.A from the Columbia University Graduate School of Business with a concentration in accounting.

We believe that Mr. Benedik s qualifications to serve on the Board of Directors include his more than 30-years of experience working as a certified public accountant in the audit division at Arthur Andersen LLP, and his experience as a Managing Director of Arthur Andersen LLP. His experience and insights also help the Company assess risk management and overall financial risks. Mr. Benedik s financial expertise has proven invaluable to the Company, and he currently serves as the Chairman of the Audit Committee and a member of the Governance and Nominations Committee.

*Charles J. Casamento* has served as a director of the Company since July 1997. Since May 2007, Mr. Casamento has been a Principal and Executive Director of The Sage Group, Inc., a provider of strategic and transactional assistance to healthcare companies in the pharmaceutical, diagnostic, medical device, biotechnology and life science fields. From October 2004 to April 2007, Mr. Casamento was President, Chief Executive Officer and a member of the Board of Directors of Osteologix, Inc. a publicly held pharmaceutical company that develops products for potential use in treating osteoporosis. From 1999 to August 2004, Mr. Casamento served as Chairman of the board of directors, President and Chief Executive Officer of Questcor Pharmaceuticals, Inc., a publicly held biopharmaceutical company. Mr. Casamento formerly served as RiboGene, Inc. s Chairman of the board of directors, President and Chief Executive Officer from 1993 through 1999 until it merged with Cypros to form Questcor. He was co-founder, President and Chief Executive Officer of Interneuron Pharmaceuticals, a biopharmaceutical company, from March 1989 until May 1993. Prior to that, Mr. Casamento has held senior management positions at a number of companies, including Senior Vice President and General Manager of Genzyme, Vice President, Business Development and Strategic Planning for the Critical Care Division of American Hospital Supply; and finance, marketing and business development positions with Johnson & Johnson, Hoffman-LaRoche, Inc. and Sandoz Inc. Mr. Casamento currently serves on the board of directors and as Chairman of the pharmaceutical business development committee and Chairman of the audit committee of Supergen, Inc., a publicly held pharmaceutical company, and he serves on the board of directors and as Chairman of the pharmaceutical business development committee and member of the audit committee and compensation committee of International Stem Cell Corporation, a publicly held developer of stem cell technology; and he serves on the board of directors and is a member of the audit committee and Chairman of the compensation committee of Vivus, Inc., a publicly held pharmaceutical company. He holds a B.S. in Pharmacy from Fordham University and an M.B.A. from Iona College.

We believe that Mr. Casamento s qualifications to serve on the Board of Directors include his significant experience in operational and management roles within both large and small pharmaceutical companies, including Osteologix, Inc., Questcor Pharmaceuticals, Inc., Interneuron Pharmaceuticals and Hoffman-LaRoche, Inc. He also has extensive prior experience working in business development and provides the Company with extremely useful expertise in developing its business base, as highlighted by his position as Executive Director at The Sage Group, a consulting company specializing in the pharmaceutical space. Mr. Casamento also provides broad financial expertise that assists the Company in his current role on both our Audit Committee and Compensation Committee.

*Carl W. Cotman, Ph.D.* is a co-founder of the Company. He has been a Scientific Director of and consultant to the Company since October 1987, and has served as a director of the Company from March 1989 to October 1990 and since November 1991. Dr. Cotman is currently a Professor of Neurology and Neurobiology and Behavior at the University of California, Irvine, where he also held various other teaching and research positions since he began his career there in 1968. From 1995 to 2008, he was the Director of the Institute for Brain Aging and Dementia at the University of California, Irvine, or UCI. He currently is Director of the Alzheimer Research Center at UCI. He has chaired the Scientific Advisory Council of the Alzheimer s Association and is currently a member of numerous professional associations and committees, including the National Institute of Aging Task Force and the Bayer Consumer Care Nutrition Advisory Board. Dr. Cotman also serves on editorial boards of publications such as the Journal of Alzheimer s Disease and Other Dementias. Dr. Cotman received his B.A. in Chemistry from Wooster

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College, an M.A. in Analytical Chemistry from Wesleyan University, and a Ph.D. in Biochemistry from Indiana University.

We believe that Dr. Cotman s qualifications to serve on the Board of Directors include his extensive scientific knowledge and understanding of drug discovery and potential pathways contributing to diseases of the central nervous system. His extensive scientific background includes more than 40 years in various teaching and research positions at the University of California, Irvine, working in the fields of neurobiology, memory and cognition, and the basic mechanisms causing brain dysfunction in aging and the development of Alzheimer s disease. He currently is Chairman of our Research and Development Committee.

*Peter F. Drake, Ph.D.* has served as a director of the Company since October 2003. Dr. Drake is currently the Managing General Partner of Mayflower Partners, a healthcare investment fund. From 1999 to 2002, he served as a Managing Director in the Equity Research Department of Prudential Securities, Inc., after Prudential acquired Vector Securities International, an investment banking firm co-founded by Dr. Drake in 1988. Vector specialized in raising capital for emerging healthcare companies and acted as an advisor in merger and alliance transactions in the healthcare area. Dr. Drake also co-founded Deerfield Management and Vector Fund Management, both of which are healthcare hedge funds. Dr. Drake joined the investment banking firm of Kidder, Peabody & Co. as a Biotechnology Analyst in 1983, becoming a partner in 1986. He currently serves on the board of directors of Trustmark Insurance Co., a healthcare insurance provider, Sequoia Sciences, a private biotechnology company, and Rodman & Renshaw Capital Group, an investment bank that provides corporate finance, strategic advisory and related services to public and private companies. Dr. Drake received a B.A. degree in Biology from Bowdoin College and attended the Wharton School of Business at the University of Pennsylvania. After receiving his Ph.D. in Biochemistry and Neurobiology from Bryn Mawr College, he spent three years as a Senior Research Associate in the Department of Developmental Biology and Anatomy at Case Western Reserve University.

We believe that Dr. Drake s qualifications to serve on the Board of Directors include his extensive experience working as an executive in the investment banking industry and his understanding of corporate finance and capital markets that he gained through his work at Kidder Peabody & Co., Vector Securities International, which he co-founded, and Prudential Securities, Inc. With a Ph.D. in the neurosciences plus his capital markets expertise and experience, Dr. Drake provides a very unique set of qualifications and perspectives to assist with the development of the Company. He currently serves as Chairman of our Governance and Nominations Committees and as a member of our Audit Committee.

*M. Ross Johnson, Ph.D.* has served as a director of the Company since April 2002. Dr. Johnson is currently Chief Executive Officer, Chief Scientific Officer and President of Parion Sciences, Inc., a privately held pharmaceutical company that he co-founded in 1999. From 2002 to 2008, Dr. Johnson served on the board of directors of ADVENTRX Pharmaceuticals, a biopharmaceutical company focused on the clinical development of antiviral and anticancer technologies. From 1995 to 1999, Dr. Johnson served as President, Chief Executive Officer and Chief Scientific Officer of Trimeris Inc., a pharmaceutical company that he took public in 1997. From 1987 to 1994, he served as Vice President of Chemistry at Glaxo Inc., where he was part of the original scientific founding team for Glaxo s research entry into the United States. From 1971 to 1987, Dr. Johnson served in key scientific and research management positions with Pfizer Central Research. Dr. Johnson currently holds board positions with Parion Sciences, Inc. and the University of North Carolina Education Advancement Board. He also serves on the Advisory Boards of the College of Chemistry at the University of California at Berkeley, the Department of Chemistry at the University of North Carolina at Chapel Hill, the Biomanufacturing Research Institute and Technology Enterprise (BRITE) Center for Excellence located at North Carolina Central University and the Graduate Education Advisory Board at the University of North Carolina at Chapel Hill. He received his B.S. in Chemistry from the University of California, Berkeley, and a Ph.D. in Organic Chemistry from the University of California, Santa Barbara.

We believe that Dr. Johnson s qualifications to serve on the Board of Directors include his extensive contributions to drug discovery and development, which have resulted in over 300 scientific publications, patents and invited presentations, of which include 119 issued patents, and his experience working on several advisory boards, as a chief executive officer and chief scientific officer of other private and public companies. His work experience at very large pharmaceutical companies and his expertise and success in the biotech start-up environment

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all lend to his considerable ability to help guide the Company. He currently serves as Chairman of our Compensation Committee and as a member of our Research and Development Committee.

*Roger G. Stoll, Ph.D.* has served as a director of the Company since April 2002, and served as Chairman, President and Chief Executive Officer of the Company from August 2002 to August 2008. In August 2008, Dr. Stoll became Executive Chairman of the Company. From 2001 to 2002, Dr. Stoll served as a consultant to the venture capital industry. From 1998 to January 2001, Dr. Stoll served as Executive Vice President at Fresenius Medical Care-North America, with responsibility for the Dialysis Products Division, Spectra Medical Services Division (diagnostic services), and the North American CIS group (computer information systems). From 1991 to 1998, he served as President and Chief Executive Officer of Ohmeda Inc., a pharmaceutical and medical products company with worldwide sales of approximately $1 billion. He also was a member of the board of directors of BOC Group, PLC, now part of The Linde Group. From 1986 to 1991, Dr. Stoll served as a senior executive at Bayer AG, where he rose to the position of Executive Vice President and General Manager of the worldwide diagnostic business group that managed direct sales, manufacturing, research and development and services in over 60 countries. From 1976 to 1986, Dr. Stoll held positions of increasing responsibility at the American Critical Care division of American Hospital Supply Corporation (now Baxter), including President of American Critical Care from 1981 to 1986. He started his industrial career in 1972 at The Upjohn Company, where he conducted Phase I IV clinical pharmacology studies in humans. Dr. Stoll serves on the board of directors of Chelsea Therapeutics, a publicly held company focusing on the acquisition, development and commercialization of products for the treatment of autoimmune diseases, inflammatory diseases and cancer. Dr. Stoll also serves on the board of directors of Delcath Systems, Inc., a publicly held company engaged in the development and testing of systems for the treatment of liver cancer. Additionally, Dr. Stoll serves on the Alumni Advisory Board for the School of Pharmacy for the University of Connecticut. He is also a director of BIOCOM, a regional trade organization for biotech and pharmaceutical companies. He obtained his B.S. in pharmacy from Ferris State University and a Ph.D. in biopharmaceutics from the University of Connecticut. He also carried out post-doctoral studies in pharmacokinetics at the University of Michigan and has published over 30 scientific papers and contributed chapters in textbooks in the field of drug kinetics.

We believe that Dr. Stoll s qualifications to serve on the Board of Directors include his substantial experience working as a consultant to the venture capital industry, his tenure as an executive officer at several large pharmaceutical and medical products companies, and his service on the board of directors of other public biotechnology companies. Dr. Stoll provides the Board of Directors with valuable operational, strategic, leadership and management experience, and his varied experience allows him to provide financial and capital raising expertise to the Board and an important perspective on issues facing biopharmaceutical companies. In addition, his service on the board of directors of other companies and his international business experience provide substantial corporate governance expertise.

*Mark A. Varney, Ph.D.* has served as a director since May 2007. Dr. Varney was appointed Chief Scientific Officer and Chief Operating Officer in January 2006, and appointed President and Chief Executive Officer of the Company in August 2008. Prior to joining the Company Dr. Varney held the senior level position of Vice President and Head of Discovery at Sepracor, Inc., a publicly held pharmaceutical company, from June 2004 to January 2006. From July 2003 to June 2004, Dr. Varney was Vice President of Drug Discovery at Bionomics, Ltd., a publicly held biotechnology company that focuses on drugs to treat cancer and disorders of the central nervous system. From October 1994 to September 1999, Dr. Varney held positions of increasing responsibilities over his five-year tenure at SIBIA Neurosciences, Inc., a biotechnology company, including his most recent position as Director of Neuropharmacology. Upon the acquisition of SIBIA by Merck, Inc. in September 1999, he was appointed a Director at Merck s San Diego facility until April 2003. Prior to SIBIA, he held research positions at Servier in France and Merck Sharp & Dohme in the U.K. Dr. Varney received his B.Sc. in Biochemistry with honors from Surrey University, U.K. and completed his Ph.D. and postdoctoral training at Oxford University, U.K.

We believe that Dr. Varney s qualifications to serve on the Board of Directors include his position as the Company s President and Chief Executive Officer, and his experience working in senior level positions at Sepracor, Inc., Bionomics, Inc. and SIBIA (later as part of Merck, Inc). Dr. Varney provides the Board with both technical and scientific expertise in drug discovery and drug development, research management, governmental regulations and strategic planning expertise that is important to the advancement of our research platform as well as to the overall success of the Company.

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**Executive Officers**

Each of our executive officers serves at the discretion of the Board of Directors. The names of our executive officers and certain biographical information about them are set forth below:

| Name | Age | Position with Company |
|---|---|---|
| Roger G. Stoll, Ph.D. | 69 | Executive Chairman |
| Mark A. Varney, Ph.D. | 45 | President and Chief Executive Officer |
| Maria S. Messinger | 44 | Vice President, Chief Financial Officer and Corporate Secretary |
| James H. Coleman | 69 | Senior Vice President, Business Development |
| Steven A. Johnson | 59 | Vice President, Preclinical Development |

The biographical summaries for Drs. Stoll and Varney have been presented earlier. There are no family relationships between any director or executive officer and any other director or executive officer.

*Maria S. Messinger* was appointed Vice President, Chief Financial Officer and Corporate Secretary of the Company in December 1999. She has served as Controller of the Company since September 1994. From August 1989 to September 1994, Ms. Messinger served in a progression of positions at Ernst & Young LLP, including her most recent position as an Audit Manager. She holds a B.A. from the School of Business Administration and Economics at California State University, Fullerton and maintains an active license as a Certified Public Accountant in California.

*James H. Coleman* was appointed Senior Vice President, Business Development in May 2000. Prior to joining the Company, Mr. Coleman was President and Senior Partner of Diversified Healthcare Management, Inc., or DHM, a biopharmaceutical and biotechnology consulting firm that he founded in 1997. From March 1999 to May 2000, the Company was a client of DHM. During 1996, Mr. Coleman served as Vice President of Commercial Development at CoCensys, Inc., a biotechnology company, where he directed strategic planning and external business development. Mr. Coleman was also employed as an executive at Pharmacia & Upjohn, Inc. for over 25 years, where he acquired extensive management expertise in new product development, global strategic marketing, sales, CNS research and clinical research trial methodologies. Mr. Coleman holds a B.S. in Applied Biology from the University of Rhode Island.

*Steven A. Johnson, Ph.D.*, was appointed Vice President of Preclinical Development in January 2004 and appointed as an executive officer of the Company in February 2007. Dr. Johnson has served as Director, Clinical Research from 2000 to 2003, Director, Biological Research from 1995 to 2000, and Senior Scientist of the Company from 1994 to 1995. From 1989 to 1994, Dr. Johnson was a Research Assistant Professor in the School of Gerontology at the University of Southern California. Prior to that, he conducted research in the field of the molecular biology of development at the California Institute of Technology, and conducted research in the field of molecular biology of Alzheimer s disease at the University of Southern California. A recipient of numerous federal, state and private grants, Dr. Johnson has published more than 50 scientific papers. He received his B.S. in Food Science from Oregon State University and his Ph.D. in Molecular Biology from Purdue University.

**Director Independence**

A majority of members of the Board of Directors are independent directors, as that term is defined under Section 803 of the NYSE Amex Company Guide. The Board of Directors has affirmatively determined that the following six directors are independent: Robert F. Allnutt, John F. Benedik, Charles J. Casamento, Carl W. Cotman, Peter F. Drake and M. Ross Johnson.

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## EXECUTIVE COMPENSATION

### Summary Compensation Table

The table below summarizes the total compensation paid or earned by each of the named executive officers for the fiscal years ended December 31, 2010, 2009 and 2008. The information under the heading, Stock Awards for all applicable named executive officers includes the fair market value of shares of our common stock issued in exchange for accrued paid time off in excess of fifty (50) days, as explained more fully below. The information contained under the heading, Option Awards for all named executive officers includes the estimated value of equity awards using the Black-Scholes option pricing model as of the grant date of such awards, as explained more fully below, and does not reflect actual cash payments or actual dollars awarded.

| Name and Principal Position | Year | Salary ($) | Bonus ($) | Stock Awards ($)[1] | Option Awards ($)[2] | All Other Compensation ($)[3] | Total ($) |
|---|---|---|---|---|---|---|---|
| Roger G. Stoll, Ph.D. | 2010 | $ 338,218 | | | $ | | $ 338,218 |
| Executive Chairman | 2009 | $ 305,250 | | | $ 93,552 | | $ 398,802 |
| | 2008 | $ 370,000 | | | $ 87,280 | $ | $ 457,280 |
| Mark A. Varney, Ph.D. | 2010 | $ 330,905 | $ 30,000 | | $ | $ 49,600[4] | $ 410,505 |
| President and Chief | 2009 | $ 298,650 | | | $ 97,706 | $ 68,800[5] | $ 465,156 |
| Executive Officer | 2008 | $ 347,277 | | | $ 241,933 | $ 88,000[6] | $ 677,210 |
| Maria S. Messinger, CPA | 2010 | $ 222,127 | $ 30,000 | | $ | | $ 252,127 |
| Vice President, Chief | 2009 | $ 200,475 | | | $ 63,143 | | $ 263,618 |
| Financial Officer and Corporate Secretary | 2008 | $ 243,000 | | $ 14,870 | $ 43,640 | | $ 301,510 |
| James H. Coleman | 2010 | $ 228,526 | | | $ | $ 9,279[7] | $ 237,805 |
| Senior Vice President, | 2009 | $ 206,250 | | | $ 45,696 | $ 9,280[7] | $ 261,226 |
| Business Development | 2008 | $ 250,000 | | $ 5,464 | $ 43,640 | $ 9,280[7] | $ 308,384 |
| Steven A. Johnson, Ph.D. | 2010 | $ 202,017 | $ 30,000 | | $ | $ | $ 232,017 |
| Senior Vice President, | 2009 | $ 182,325 | | | $ 43,536 | $ | $ 225,861 |
| Business Development | 2008 | $ 221,000 | | $ 8,589 | $ 43,640 | $ | $ 273,229 |

(1) Amounts represent the fair market value of shares issued in exchange for cancellation of accrued paid time off in excess of fifty (50) days as of the end of May 2008, based upon the employee s current rate of compensation per day. The exchange took place on May 30, 2008 based on the closing price per share of our common stock on the NYSE Amex of $0.78 on such date and rounded to the nearest whole share. In connection with the transaction, Ms. Messinger, Mr. Coleman and Dr. Johnson received 19,064, 7,005 and 11,012 shares of our common stock, respectively. The shares of our common stock were issued under our 2006 Stock Incentive Plan.

(2) There were no option awards granted to the named executive officers during the year ended December 31, 2010. For the years ended December 31, 2009 and 2008, amounts represent the aggregate grant date estimated fair value of the option award using the Black-Scholes option pricing model. Assumptions used in the calculation of these amounts are included in footnote 1 to our audited financial statements for the year ended December 31, 2009.

(3) In accordance with Securities and Exchange Commission rules, Other Annual Compensation in the form of perquisites and other personal benefits has been omitted where the aggregate amount of such perquisites and other personal benefits was less than $10,000.

(4) Represents payments by us to Dr. Varney under the terms of his employment agreement and related to his relocation to southern California, including $31,000 for a mortgage subsidy, subject to a gross-up of $18,600 to cover his additional income tax liabilities. See Employment and Consulting Agreements on page 53.

(5) Represents payments by us to Dr. Varney under the terms of his employment agreement and related to his relocation to southern California, including $43,000 for a mortgage subsidy, subject to and also including a gross-up of $25,800, to cover his additional income tax liabilities. See Employment and Consulting Agreements on page 53.

(6) Represents payments by us to Dr. Varney under the terms of his employment agreement and related to his relocation to southern California, including $55,000 for a mortgage subsidy, subject to and also including a gross-up of $33,000, to cover his additional income tax liabilities. See Employment and Consulting Agreements on page 53.

(7) Represents premiums for life insurance for Mr. Coleman, in lieu of participation in our medical benefit plans.

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The table below details the cash and estimated values for the non-cash components of the above summary compensation information for each named executive officer for the years ended December 31, 2010, 2009 and 2008. The non-cash components include the estimated value of equity awards using the Black-Scholes option pricing model, as described more fully in the table above.

| Name and Principal Position | Year | Total Cash Compensation ($) | Total Non-cash Compensation ($) | Total ($) |
|---|---|---|---|---|
| Roger G. Stoll, Ph.D. | 2010 | $ 338,218 | $ | $ 338,218 |
| Executive Chairman | 2009 | $ 305,250 | $ 93,552 | $ 398,802 |
| | 2008 | $ 370,000 | $ 87,280 | $ 457,280 |
| Mark A. Varney, Ph.D. | 2010 | $ 410,505 | $ | $ 410,505 |
| President and Chief Executive Officer | 2009 | $ 367,450 | $ 97,706 | $ 465,156 |
| | 2008 | $ 435,277 | $ 241,933 | $ 677,210 |
| Maria S. Messinger, CPA | 2010 | $ 252,127 | $ | $ 252,127 |
| Vice President, Chief Financial Officer | 2009 | $ 200,475 | $ 63,143 | $ 263,618 |
| and Corporate Secretary | 2008 | $ 243,000 | $ 58,510 | $ 301,510 |
| James H. Coleman | 2010 | $ 237,805 | $ | $ 237,805 |
| Senior Vice President, Business | 2009 | $ 215,530 | $ 45,696 | $ 261,226 |
| Development | 2008 | $ 259,280 | $ 49,104 | $ 308,384 |
| Steven A. Johnson, Ph.D. | 2010 | $ 232,017 | $ | $ 232,017 |
| Vice President, Preclinical | 2009 | $ 182,325 | $ 43,536 | $ 225,861 |
| Development | 2008 | $ 221,000 | $ 52,229 | $ 273,229 |

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**Narrative to Summary Compensation Table**

In June 2004, the Board of Directors approved a performance-based incentive compensation program for named executive officers that included cash bonus targets of 20% of respective annual base salaries. Actual bonus amounts may differ from the established targets based upon our performance, as well as that of the individual named executive officer, as compared to established goals. For the year ended December 31, 2010, performance bonuses of $30,000 were awarded to each of Dr. Mark A. Varney, Ms. Maria S. Messinger and Dr. Steven A. Johnson. These performance bonuses represented less than 20% of the annual base salary for each of the respective named executive officers. There were no performance bonuses awarded to the named executive officers for the years ended December 31, 2009 and 2008.

The exercise price for the stock options granted to the named executive officers is no less than the fair market value of the stock on the date of the grant. Options vest at a rate of 33 1/3% per year starting on the anniversary date of the option grant and are contingent upon the officer s continued employment. Accordingly, the option will provide a return to the named executive officer only if he or she remains our employee and the market price of our common stock appreciates over the option term. There were no stock options granted to the named executive officers during the year ended December 31, 2010.

To better align the interests of our named executive officers with those of its stockholders, to create ownership focus and to build long-term commitment, we have adopted a common stock ownership policy for our named executive officers. The policy requires named executive officers to acquire and maintain ownership of at least 30,000 shares of our common stock before December 16, 2007, or within three years of commencement of service as a named executive officer, whichever is later. Thereafter, the policy provides for the withholding of salary increases and bonus payments, until the share ownership level has been achieved and maintained by such named executive officer. The Board of Directors has determined that all named executive officers are currently in compliance with the above common stock ownership policy.

See also Employment and Consulting Agreements for further discussion of compensation arrangements pursuant to which the amounts listed under the Summary Compensation Table and Grants of Plan Based Awards Table were paid or awarded and the criteria for such payment or award.

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**Outstanding Equity Awards at Fiscal Year-End**

There were no outstanding unvested stock awards as of December 31, 2010. The table below relates solely to outstanding option awards as of December 31, 2010. Except as noted in the footnotes below, the options listed below vest at a rate of 33 1/3% per year commencing on the first anniversary of the date of grant and have a ten-year term.

| Name | Number of Securities Underlying Unexercised Options (#) Exercisable | Number of Securities Underlying Unexercised Options (#) Unexercisable | Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) | Option Exercise Price | Option Expiration Date |
|---|---|---|---|---|---|
| Roger G. Stoll, Ph.D. | 187,667 | 375,333 | | $ 0.20 | 08/22/2019 |
| | 133,334 | 66,666 | | $ 0.54 | 01/18/2018 |
| | 300,000 | | | $ 1.30 | 12/18/2016 |
| | 205,017[1] | | | $ 2.95 | 02/09/2016 |
| | 300,000 | | | $ 2.35 | 12/01/2015 |
| | 300,000 | | | $ 2.68 | 12/16/2014 |
| | 600,000 | | | $ 2.76 | 12/09/2013 |
| | 14,545[2] | | | $ 4.40 | 09/02/2013 |
| | 1,061[3] | | | $ 3.77 | 08/29/2013 |
| | 2,326[3] | | | $ 1.72 | 07/31/2013 |
| | 2,222[3] | | | $ 1.80 | 06/30/2013 |
| | 2,247[3] | | | $ 1.78 | 05/30/2013 |
| | 3,604[3] | | | $ 1.11 | 04/30/2013 |
| | 5,556[3] | | | $ 0.72 | 03/31/2013 |
| | 5,634[3] | | | $ 0.71 | 02/28/2013 |
| | 600,000[4] | | | $ 0.78 | 08/13/2012 |
| | 30,000 | | | $ 2.68 | 04/09/2012 |
| Mark A. Varney, Ph.D. | 196,000 | 392,000 | | $ 0.20 | 08/22/2019 |
| | 133,334 | 66,666 | | $ 0.97 | 08/13/2018 |
| | 133,334 | 66,666 | | $ 0.54 | 01/18/2018 |
| | 250,000 | | | $ 1.30 | 12/18/2016 |
| | 750,000[5] | | | $ 2.95 | 01/30/2016 |
| Maria S. Messinger, CPA | 126,667 | 253,333 | | $ 0.20 | 08/22/2019 |
| | 66,667 | 33,333 | | $ 0.54 | 01/18/2018 |
| | 125,000 | | | $ 1.30 | 12/18/2016 |
| | 100,000 | | | $ 2.35 | 12/01/2015 |
| | 100,000 | | | $ 2.68 | 12/16/2014 |
| | 75,000 | | | $ 2.76 | 12/09/2013 |
| | 663[3] | | | $ 3.77 | 08/29/2013 |
| | 1,453[3] | | | $ 1.72 | 07/31/2013 |
| | 1,389[3] | | | $ 1.80 | 06/30/2013 |
| | 1,404[3] | | | $ 1.78 | 05/30/2013 |
| | 2,252[3] | | | $ 1.11 | 04/30/2013 |
| | 3,472[3] | | | $ 0.72 | 03/31/2013 |
| | 3,521[3] | | | $ 0.71 | 02/28/2013 |
| | 50,000 | | | $ 0.75 | 12/16/2012 |
| James H. Coleman | 91,667 | 183,333 | | $ 0.20 | 08/22/2019 |
| | 66,667 | 33,333 | | $ 0.54 | 01/18/2018 |
| | 125,000 | | | $ 1.30 | 12/18/2016 |

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| Name | Number of Securities Underlying Unexercised Options (#) Exercisable | Number of Securities Underlying Unexercised Options (#) Unexercisable | Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) | Option Exercise Price | Option Expiration Date |
|---|---|---|---|---|---|
| | 100,000 | | | $ 2.35 | 12/01/2015 |
| | 100,000 | | | $ 2.68 | 12/16/2014 |
| | 75,000 | | | $ 2.76 | 12/09/2013 |
| | 840[3] | | | $ 3.77 | 08/29/2013 |
| | 1,841[3] | | | $ 1.72 | 07/31/2013 |
| | 1,759[3] | | | $ 1.80 | 06/30/2013 |
| | 1,779[3] | | | $ 1.78 | 05/30/2013 |
| | 2,853[3] | | | $ 1.11 | 04/30/2013 |
| | 4,398[3] | | | $ 0.72 | 03/31/2013 |
| | 4,460[3] | | | $ 0.71 | 02/28/2013 |
| | 50,000[6] | | | $ 0.80 | 02/11/2013 |
| | 100,000 | | | $ 0.75 | 12/16/2012 |
| | 50,000 | | | $ 2.11 | 10/09/2011 |
| Steven A. Johnson, Ph.D. | 87,334 | 174,666 | | $ 0.20 | 08/22/2019 |
| | 66,667 | 33,333 | | $ 0.54 | 01/18/2018 |
| | 150,000 | | | $ 1.30 | 12/18/2016 |
| | 100,000 | | | $ 2.35 | 12/01/2015 |
| | 100,000 | | | $ 2.68 | 12/16/2014 |
| | 50,000 | | | $ 2.76 | 12/09/2013 |
| | 30,000 | | | $ 0.75 | 12/16/2012 |

(1) Dr. Stoll received options in lieu of cash reimbursement of real estate expenses incurred in connection with the relocation of his principal residence to southern California. These options were fully vested on the date of grant and have an exercise price equal to $2.95, representing the closing price of the Company s common stock on the NYSE Amex on the grant date.

(2) Beginning in May 2003, Dr. Stoll voluntarily deferred his entire base salary, as previously reduced. In September 2003, Dr. Stoll agreed to accept stock options to purchase 14,545 shares of the Company s common stock in lieu of this deferred salary. The number of options issued represents $64,000 of his deferred salary divided by the closing sale price of the Company s common stock on the NYSE Amex on the date that Dr. Stoll s salary was re-instated in September 2003. These options were fully vested on the date of grant.

(3) Represents stock options issued in lieu of a portion of base salary. The number of options issued represents the dollar value of base salary not received by the named executive officer divided by the closing sale price of the Company s common stock on the NYSE Amex on the last trading day of the month during which the portion of base salary was not received by the named executive officer. These options were fully vested on the date of grant.

(4) In connection with his employment, Dr. Stoll was granted options to purchase 600,000 shares of common stock at an exercise price of $0.78 per share, representing the closing price of the Company s common stock on the NYSE Amex on the date of grant. Of the 600,000 options granted, 200,000 options vested immediately. Another 200,000 options vested upon securing the amendment to the Company s agreement with Les Laboratoires Servier in October 2002. The remaining 200,000 options vested upon the achievement of pre-determined milestones, all of which were met by the beginning of 2007.

(5) In connection with his employment, Dr. Varney was granted options to purchase 750,000 shares of common stock at an exercise price of $2.95 per share, representing the closing price of the Company s common stock on the date of grant. Of the 750,000 options granted, 100,000 options vested upon his first date of employment on January 30, 2006; 100,000 options vested one-year from his initial date of employment, or January 30, 2007; and 550,000 options vested in equal annual installments over a three-year period from the date of grant.

(6) During 2003, Mr. Coleman agreed to accept stock options in lieu of the cash bonus provided in his employment agreement. These options were fully vested on the date of grant and have an exercise price per share equal to $0.80, representing the closing price of the Company s common stock on the NYSE Amex on the grant date.

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**Option Exercises and Stock Vested**

None of the Company s named executive officers exercised any options to purchase shares of the Company s common stock or had any outstanding unvested stock awards during the year ended December 31, 2010.

**Potential Payments Upon Termination or Change-In-Control**

The named executive officers have each entered into employment agreements and/or severance agreements governing payments upon termination or in the event we are subject to a change-in-control. See Employment and Consulting Agreements on page 53. In March 2009, the named executive officers also entered into retention agreements, the impact of which is included in this section titled Potential Payments Upon Termination or Change-in-Control. The terms of such agreements are discussed under the heading Related Party Transactions on page 55.

*Payments Made Upon Termination*

Regardless of the manner in which a named executive officer s employment terminates, he or she shall be entitled to receive amounts earned during the term of his or her employment. Such amounts may include stock options awarded under our 1996 Stock Incentive Plan, 2006 Stock Incentive Plan, as amended, and independent of such plans, a portion of which may be subject to accelerated vesting, accrued obligations (including unused vacation pay), and a pro-rated bonus, if applicable. In the event that Dr. Stoll, Dr. Varney, Mr. Coleman or Ms. Messinger s employment is terminated by us without cause or by such named executive officer for good reason (as defined in their respective agreements), such person shall be entitled to receive a severance payment of twelve (12) months of his or her base salary (with the exception of Dr. Varney who shall be entitled to receive a severance payment of twelve (12) months of his base salary based upon his average monthly base salary for the twelve (12) months immediately prior to the termination event). Additionally, in such instance Ms. Messinger may be entitled to twelve (12) months continued health and benefits coverage.

*Payments Made Upon Termination Due to Death or Disability*

In the event of termination of employment due to the death or disability of a named executive officer, in addition to the payment of accrued obligations, the named executive officer will receive benefits under our disability plan or payments under our life insurance plan, as appropriate. Additionally, with respect to Dr. Stoll, Dr. Varney and Mr. Coleman, in the event of disability such named executive officers will receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary.

*Payments Made Upon a Change-In-Control Without Termination*

If we are subject to a change-in-control, irrespective of whether a termination of employment occurs, all stock options held by the named executive officer will automatically vest and become exercisable (with the exception of Mr. Coleman who will receive accelerated vesting for one additional year and only if he is terminated). Additionally, pursuant to the terms of the March 2009 retention agreements, under certain circumstances each named executive officer will be entitled to receive a lump sum cash bonus equal to six (6) months of the executive s base salary.

*Payments Made Upon Termination in Connection With a Change-In-Control*

If a named executive officer s employment is terminated in connection with or, for Dr. Johnson within six (6) months following, a change of control without cause or for good reason (other than Dr. Johnson whose agreement does not include termination for good reason), then the named executive officers shall be entitled to the benefits listed under the headings Payments Made Upon Termination and Payments Made Upon a Change-In-Control Without Termination, included above. Additionally, in connection with such event, Dr. Johnson will receive a severance payment of twelve (12) months of his base salary and twelve (12) months continued health and benefits coverage. Further, pursuant to the terms of the March 2009 retention agreements, under certain

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circumstances each named executive officer will be entitled to receive a lump sum cash bonus equal to six (6) months of the executive s base salary.

**Employment and Consulting Agreements**

Roger G. Stoll, Ph.D. has served as a director since April 2002 and became our Chairman, President and Chief Executive Officer in August 2002. In August 2008, Dr. Stoll became our Executive Chairman and Dr. Varney became our President and Chief Executive Officer. Dr. Stoll s employment agreement originally included a three-year term, was subsequently amended to include another three-year term expiring in August 2008, a one-year term expiring in August 2009, a one-year term expiring in August 2010, a one-year term expiring in August 2011 and another one-year term expiring in August 2012. As of December 31, 2010, his employment agreement called for a base salary of $370,000 per year. Dr. Stoll s base salary is subject to annual review by our Compensation Committee. Under the terms of his employment agreement, in the event of termination of his employment, under certain circumstances Dr. Stoll is entitled to compensation equal to twelve (12) months of his then current salary. In addition, in the event of his termination of employment, in certain circumstances, any vested options granted to Dr. Stoll remain exercisable for the remainder of the original option term and any unvested options granted to Dr. Stoll in connection with his employment, as detailed above, may be subject to accelerated vesting and remain exercisable for the remainder of the original option term. In the event of termination due to disability, Dr. Stoll will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary. Further, in the event that we are subject to a change-in-control, all unvested options then held by Dr. Stoll shall be subject to accelerated vesting.

Mark A. Varney, Ph.D. joined us as Chief Operating Officer and Chief Scientific Officer in January 2006 and was named President and Chief Executive Officer in August 2008. His employment agreement originally provided for a three-year term through August 2011 and was subsequently amended to include another three-year term expiring in August 2014. Dr. Varney s employment agreement calls for a base salary of $362,000 per year as of December 31, 2010 and includes an annual bonus, at the discretion of our Board of Directors. Pursuant to the terms of his employment agreement, we will provide Dr. Varney with a mortgage subsidy over five years, terminating on the earlier of the date of his termination of employment or July 2011, in the form of a monthly payment, whereby we will pay 6% of the principal amount of a mortgage (which principal amount shall not to exceed $1,200,000) on his primary residence during the first year, which amount declines by 1% each year thereafter, and which amount is grossed up by a factor of 1.6 to cover Dr. Varney s additional income tax liabilities. In addition to the foregoing, Dr. Varney received a $25,000 hiring bonus, $15,000 to cover miscellaneous relocation expenses, temporary housing and reimbursement of real estate closing fees, sales commissions and moving costs. In the event of termination of Dr. Varney s employment without cause or for good reason, under certain circumstances he is entitled to receive compensation of twelve (12) months of his base salary based upon the average monthly base salary for the twelve (12) months immediately prior to the termination event and his vested options will remain exercisable for the balance of their original terms. In the event of termination due to disability, Dr. Varney will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary. In addition, in the event that we are subject to a change-in-control, any unvested options then held by Dr. Varney shall be subject to accelerated vesting.

Maria S. Messinger joined us as Controller in September 1994 and was named as Vice President, Chief Financial Officer and Corporate Secretary in December 1999. Under the terms of her severance agreement, in the event of termination of her employment, under certain circumstances Ms. Messinger is entitled to receive compensation of twelve (12) months of her then current annual base salary, which as of December 31, 2010 was $243,000. Ms. Messinger s severance agreement also includes a pro-rated bonus (if applicable) and continued employee benefits for a period of twelve (12) months following termination. Additionally, in the event that we are subject to a change-in-control, any unvested options then held by Ms. Messinger shall be subject to accelerated vesting.

James H. Coleman joined us as Senior Vice President, Business Development in May 2000. His employment agreement, as amended to date, provides a base salary of $250,000 per year as of December 31, 2010. Mr. Coleman s employment agreement also provides an annual bonus between 0 and 50% of his annual base salary, at the discretion of the Chief Executive Officer and subject to approval by our Compensation Committee. In the event of termination of his employment, Mr. Coleman is entitled, under certain circumstances, to receive

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compensation of twelve (12) months of his then current salary and any unvested options then held by Mr. Coleman shall be subject to accelerated vesting for an additional one year period. Additionally, in the event of termination due to disability, Mr. Coleman will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary.

Steven A. Johnson, Ph.D. joined us as a Senior Scientist in June 1994 and was named as Vice President, Preclinical Development in January 2004 and appointed as an executive officer in February 2007. Under the terms of his severance agreement, in the event of termination of Dr. Johnson s employment without cause in connection with or within six (6) months following the date that we are subject to a change-in-control, under certain circumstances he is entitled to receive compensation of twelve (12) months of his then current salary, which as of December 31, 2010 was $221,000 per year. Dr. Johnson s severance agreement also provides continued employee benefits for a period of twelve (12) months following termination. In addition, in the event that we are subject to a change-in-control, any unvested options then held by Dr. Johnson shall be subject to accelerated vesting.

**Director Compensation**

The Compensation Committee uses a combination of cash and stock-based incentive compensation to attract and retain qualified candidates to serve on the Board of Directors. In setting director compensation, the Compensation Committee considers the significant amount of time that directors expend in fulfilling their duties to us as well as the skill-level required by us of members of the Board of Directors. Similar to executive officers, directors are subject to a minimum share ownership requirement. The policy requires directors to acquire and maintain ownership of at least 30,000 shares of our common stock before December 16, 2007, or within three years of commencement of service as a director, whichever is later. Thereafter, the policy provides for the withholding of fees until the ownership level has been achieved by such director. The Board of Directors has determined that all directors serving us have met the minimum share ownership requirement.

During 2009, each non-employee director was entitled to receive $4,000 at each in-person Board of Directors meeting attended and $2,000 for each related Board of Directors meeting attended by telephone. Beginning in February 2009, the Board of Directors deferred the fees related to its telephonic meetings in an effort to conserve our financial resources. In May 2010, the Board reinstated the fees for Board of Directors meetings attended by telephone.

Also, the Chairman of the Compensation Committee, the Governance and Nominations Committee and the Research and Development Committee is entitled to receive $2,000 for each committee meeting attended and other members of the respective committees are entitled to receive $1,000 for each committee meeting attended. The Chairman of the Audit Committee is entitled to receive $3,000 for each committee meeting attended and the remaining members of the Audit Committee are entitled to receive $1,000 for each committee meeting attended. In September 2009, the Board of Directors deferred payment of its committee fees in an effort to conserve our financial resources. In May 2010, the Board reinstated the payment of committee fees.

Each non-employee director is automatically granted options to purchase 30,000 shares of common stock upon commencement of service as a director. Additionally, each non-employee director is granted options to purchase 30,000 shares of common stock on the date of the first meeting of the Board of Directors for the relative calendar year. These nonqualified options described above each have an exercise price equal to 100% of the fair market value of the common stock on the date of grant, have a ten-year term and vest in equal increments of 33 1/3% on each anniversary date of the dates of grant, and are otherwise subject to the terms and provisions of the 2006 Stock Incentive Plan.

The above cash compensation and nonqualified option grant provisions do not apply to non-employee directors who serve on the Board of Directors to oversee an investment in us. Compensation for such non-employee directors, if appropriate, is determined separately. As of December 31, 2010, none of our directors served on the Board of Directors in such capacity.

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**Director Summary Compensation Table**

The table below summarizes the total compensation paid or earned by each of the non-employee directors for the fiscal year ended December 31, 2010. Directors who are also our employees did not receive any additional compensation for services as a director.

| Name | Fees Earned or Paid in Cash ($) | Option Awards ($)[1] | All Other Compensation ($)[2] | Total ($) |
|---|---|---|---|---|
| Robert F. Allnutt | $ 18,000 | $ 4,122[3] | | $ 22,122 |
| John F. Benedik, CPA | $ 22,000 | $ 4,122[4] | | $ 26,122 |
| Charles J. Casamento | $ 20,000 | $ 4,122[5] | | $ 24,122 |
| Carl W. Cotman, Ph.D. | $ 16,000 | $ 4,122[6] | | $ 20,122 |
| Peter F. Drake, Ph.D. | $ 12,000 | $ 4,122[7] | | $ 16,122 |
| M. Ross Johnson, Ph.D. | $ 18,000 | $ 4,122[8] | | $ 22,122 |

(1) Amounts represent the aggregate grant date estimated fair value of the option awards using the Black-Scholes option pricing model. Assumptions used in the calculation of these amounts include a weighted-average risk free interest rate of 3.2%; .a dividend yield of 0%; a weighted average life of 6.9 years and a volatility factor of the expected market price of our common stock of 108%.

(2) In accordance with Securities and Exchange Commission rules, All Other Compensation in the form of perquisites and other personal benefits has been omitted where the aggregate amount of such perquisites and other personal benefits was less than $10,000. The amounts reflected in this column represent fees paid to such directors in their capacities as consultants to us.

(3) Mr. Allnutt had an aggregate of 300,000 option awards outstanding as of December 31, 2010.

(4) Mr. Benedik had an aggregate of 175,000 option awards outstanding as of December 31, 2010.

(5) Mr. Casamento had an aggregate of 315,000 option awards outstanding as of December 31, 2010.

(6) Dr. Cotman had an aggregate of 260,000 option awards outstanding as of December 31, 2010.

(7) Dr. Drake had an aggregate of 250,000 option awards outstanding as of December 31, 2010.

(8) Dr. Johnson had an aggregate of 320,000 option awards outstanding as of December 31, 2010.

**RELATED PARTY TRANSACTIONS**

Except as set forth below, there were no disclosable transactions with related persons under Item 404 of Regulation S-K during the fiscal year ended December 31, 2010 or currently proposed.

In March 2009, our executive officers and other key personnel entered into retention bonus agreements to foster the continuous employment of such individuals. Under such agreements, each executive officer will be entitled to receive a lump sum cash bonus equal to six (6) months of the executive s base salary in the event of a change in control, as defined in our 2006 Stock Incentive Plan, occurs and the executive remains continuously employed with us, our successor or, if applicable, the ultimate parent of any such successor (collectively referred to as the Surviving Entity), or any subsidiary thereof, through the date occurring three (3) months post-change of control, or such shorter period as deemed necessary by the Surviving Entity (referred to as the Payment Date), to allow for an orderly transition of personnel and information and to allow for an appropriate integration process, as needed. The amount of the bonus for executive officers, based on base salaries as of December 31, 2010, would be as follows: Dr. Stoll - $185,000, Dr. Varney - $181,000, Ms. Messinger - $121,500, Mr. Coleman - $125,000 and Dr. Johnson - $110,500. The retention bonus agreements provide that the bonus shall be payable by the Surviving Entity on or as soon as practicable following the Payment Date, but no later than 15 days thereafter, and shall be determined without regard to any reduction of base salary applicable to our executives subsequent to March 13, 2009 and prior to a change in control. In the event that the executive officer s employment is terminated by the Surviving Entity or a subsidiary thereof after a change in control and prior to the Payment Date, in certain circumstances where the termination is without cause or for good reason, the bonus shall be payable by the Surviving Entity as soon as practicable following the date of termination of the executive officer s employment (but no later than sixty (60) days thereafter), subject to the executive officer executing and not revoking a general release of all claims against the Surviving Entity in a form acceptable to the Surviving Entity within sixty (60) days following such termination of employment.

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## PRINCIPAL STOCKHOLDERS

The following table sets forth, to our knowledge, certain information regarding the beneficial ownership of our common stock as of July 31, 2011, by (i) each person known by us to be the beneficial owner of more than 5% of the outstanding common stock, (ii) each of our directors and nominees, (iii) each of the named executive officers in the Summary Compensation Table and (iv) all of our executive officers and directors as a group. Except as indicated in the footnotes to this table, we believe that the persons named in this table have sole voting and investment power with respect to the shares of common stock indicated.

| Directors, Officers and 5% Stockholders[1] | Shares Beneficially Owned[2] | Percent of Common Stock Beneficially Owned[2] |
|---|---|---|
| Samyang Optics Co., Ltd. | 14,257,666[3] | 17.2 |
| Robert F. Allnutt | 325,500[4] | * |
| John F. Benedik | 165,000[5] | * |
| Charles J. Casamento | 290,000[6] | * |
| James H. Coleman | 1,108,851 [7] | 1.4 |
| Carl W. Cotman, Ph.D. | 294,500[8] | * |
| Peter F. Drake, Ph.D. | 260,000( | |