

CORTEX PHARMACEUTICALS INC/DE/

Form S-1

January 20, 2011

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As filed with the Securities and Exchange Commission on January 20, 2011

Registration No. 333-

**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM S-1**  
**REGISTRATION STATEMENT**

*UNDER*

*THE SECURITIES ACT OF 1933*

**CORTEX PHARMACEUTICALS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction of

**2834**  
(Primary Standard Industrial

**33-0303583**  
(I.R.S. Employer

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incorporation or organization)

Classification Code Number)

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:*

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**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

**CALCULATION OF REGISTRATION FEE**

Title of each class of securities to be registered	Proposed maximum aggregate offering price	Amount of registration fee <sup>(1)</sup>
Units, consisting of Common Stock (par value \$0.001 per share) <sup>(2)</sup> and Warrants to purchase Common Stock		
Common Stock included in the Units		
Warrants included in the Units		(3)
Common Stock issuable upon the exercise of Warrants included in the Units <sup>(4)</sup>		(3)
Placement Agent Warrants		
Common Stock issuable upon the exercise of Placement Agent Warrants <sup>(4)</sup>		
<b>Total</b>	<b>\$3,000,000</b>	<b>\$348.30</b>

<sup>(1)</sup> Calculated pursuant to Rule 457(o) on the basis of the maximum aggregate offering price of all of the securities to be registered. In no event will the aggregate offering price of all securities issued in the offering pursuant to this registration statement exceed \$3,000,000,

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- inclusive of any exercise price thereof.
- (2) Shares of our common stock being registered hereunder are accompanied by our preferred stock purchase rights described in the Rights Agreement dated February 8, 2002, as amended to date, between us and American Stock Transfer & Trust Company as rights agent. Until the occurrence of certain prescribed events, such rights are not exercisable, are evidenced by each certificate for our common stock and will be transferred along and only with our common stock.
  - (3) No fee required pursuant to Rule 457(g).
  - (4) Pursuant to Rule 416 under the Securities Act of 1933, this registration statement also covers an indeterminate number of additional shares of common stock as may become issuable upon the exercise of the warrants to purchase shares of our common stock and the placement agent warrants as a result of stock splits, stock dividends or similar events.

**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 January 20, 2011**

Prospectus

## **Cortex Pharmaceuticals, Inc.**

\_\_\_\_\_ Units

Each Consisting of

\_\_ Shares of Common Stock

and

\_\_\_\_\_ Warrants to purchase \_\_ Shares of Common Stock

We are offering up to \_\_ units, each unit consisting of \_\_ shares of our common stock and \_\_ warrants to purchase \_\_ shares of our common stock. Subject to certain ownership limitations, each warrant entitles the holder to purchase \_\_ shares 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 January 19, 2011, the last reported closing sale price of our common stock was \$0.18 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.

\_\_\_\_\_ 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 \_\_\_% 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 an aggregate of \_\_ percent of the units issued in this offering. We estimate the total expenses of this offering, excluding the placement agent fees, will be approximately \$\_\_\_\_. 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 59 of this prospectus for more information on this offering and the placement agent arrangements.

	<b>Per Unit</b>	<b>Maximum Offering Amount</b>
Public offering price	\$	\$ 3,000,000
Placement Agent fees	\$	\$
Proceeds, before expenses, to us	\$	\$

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 where 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 Cortex Pharmaceuticals, Inc.

**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 molecule compounds that positively modulate AMPA-type glutamate receptors, a complex of proteins that is 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 this 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 compound is CX1739, which currently is in Phase II clinical development.

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 specific 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, we plan to develop compounds internally for a selected set of indications, many of which will allow us to apply for Orphan Drug status. These 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. 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.

In March 2010, we entered into an asset purchase agreement with Biovail Laboratories International SRL, or 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.

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 retain 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 retain 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 merged with Valeant Pharmaceuticals International, Inc., or Valeant. As a result of the merger and changes in strategic directions for the combined company, Valeant announced its intent to exit several therapeutic development programs, including the respiratory depression project acquired from us. We are in discussions with Valeant regarding the future of the project and under our agreement with Biovail, all contractual obligations remain in place.

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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.

**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 ___ units. Each unit will consist of ___ shares of our common stock and ___ warrants to purchase up to ___ shares of our common stock.
Description of Warrants:	The warrants will be exercisable at any time after the date of issuance and ending on the ___ 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:	_____ 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 <b>Use of Proceeds</b> on page 11.
Risk Factors:	An investment in our securities is speculative and involves substantial risks. You should read the <b>Risk Factors</b> section of this prospectus beginning on page 4 to consider carefully before deciding to invest in our securities.
OTC Bulletin Board Symbol:	CORX.OB

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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 September 30, 2010. Unless we specifically state otherwise, the share information in this prospectus excludes:

12,553,089 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 \$1.32 per share;

2,897,178 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;

\_\_\_\_\_ 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

\_\_\_\_\_ 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**

*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 quarter ended September 30, 2010, we have generated only modest operating revenues and we have incurred net losses approximating \$113,151,000. For the nine months ended September 30, 2010, our net income was approximately \$2,613,000, due primarily to revenues from our March 2010 sale of select AMPAKINE assets to Biovail. For the fiscal years ended December 31, 2009, 2008 and 2007, our net losses were approximately \$8,441,000, \$14,596,000, and \$12,969,000, respectively. As of September 30, 2010, we had an accumulated deficit of approximately \$117,530,000. 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 second quarter of 2011. We believe that we will require additional capital to fund on-going operations beyond that time. Additional funds may result from milestone payments related to our agreements with Les Laboratoires Servier, or Servier, and Biovail, but there is no assurance that we will receive such milestone payments within the desired timeframe, or if such payments will be received at all. Additional funds also may result from the exercise of warrants to purchase shares of our common stock. As of September 30, 2010, 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;

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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. 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 and except for Biovail's limited rights described below.

In connection with our March 2010 transaction with 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.

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.

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 2012.

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.

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***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 five 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 agreements with Servier and Biovail, 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 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.

***If we are unable to maintain our relationships with academic consultants and the University of California, Irvine, our business could suffer.***

We depend upon our relationships with academic consultants, particularly Dr. Gary S. Lynch of the University of California, Irvine. In addition, we sponsored preclinical research in Dr. Lynch's laboratories at the University of California, Irvine that is part of our product development and corporate partnering profile. If our relationship with Dr. Lynch or the University of California, Irvine, is disrupted, our AMPA- receptor research program could be adversely affected. The term of our consulting agreement with Dr. Lynch commenced in November 1987 and will continue until terminated by either party to the agreement upon at least 60 days' prior written notice to the other party. Our agreements with our other consultants are generally also terminable by the consultant on short notice.

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### **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. 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.

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*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.; our Vice President of Preclinical Development, Steven A. Johnson, Ph.D.; and our Senior Director of Medicinal Chemistry, Leslie J. Street, 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, 2009 and 2008, as quoted on the Over the Counter Bulletin Board and NYSE Amex (formerly The American Stock Exchange), was \$0.09 to \$0.25, \$0.07 to \$0.63, and \$0.41 to \$1.24, 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.



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

As of September 30, 2010, we had approximately 78.9 million shares of our common stock outstanding.

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If all warrants and options outstanding as of September 30, 2010 are exercised prior to their expiration, up to approximately 37 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 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.

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*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 \_\_\_\_\_ 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, investors in this offering can expect an immediate dilution of \$\_\_\_\_ per share, or \_\_%, at the assumed public offering price, assuming no exercise of the warrants. See Dilution on page 14 for a more detailed discussion of the dilution you will incur in this offering.

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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 \$\_\_\_\_\_ 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.

**Table of Contents****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 fiscal years ended December 31, 2011 (through January 19, 2011), December 31, 2010 and 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
<b>Fiscal Year ended December 31, 2011</b>		
First Quarter (through January 19, 2011)	\$ 0.19	\$ 0.17
<b>Fiscal Year ended December 31, 2010</b>		
Fourth Quarter	\$ 0.21	\$ 0.15
Third Quarter	0.18	0.14
Second Quarter	0.24	0.16
First Quarter	0.25	0.09
<b>Fiscal Year ended December 31, 2009</b>		
Fourth Quarter	\$ 0.22	\$ 0.07
Third Quarter	0.32	0.18
Second Quarter	0.44	0.19
First Quarter	0.63	0.25

The high and low sales prices for our common stock on January 19, 2011, as quoted on the OTCBB, were \$0.17 and \$0.19, respectively.

**Holders**

As of January 13, 2011, there were 402 record holders of our common stock, and approximately 10,000 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.

**Table of Contents****CAPITALIZATION**

The following table sets forth our capitalization as of September 30, 2010:

on an actual basis; and

on an as adjusted basis to reflect our sale of the \_\_\_ 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 September 30, 2010	
	Actual	Pro Forma
	(unaudited)	
	(in thousands, except share data)	
Cash and cash equivalents and short-term investments	\$ 4,508	\$
Long-term obligations, less current portion	\$ 19	\$
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 _____ 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	120,774	
Unrealized gain, available for sale marketable securities	1	
Deficit accumulated during development stage	(117,530)	
<b>Total stockholders' equity (deficit)</b>	<b>3,345</b>	
<b>Total capitalization</b>	<b>\$ 3,364</b>	<b>\$</b>

The table above excludes:

12,553,089 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 \$1.32 per share;

2,897,178 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;

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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;

\_\_\_\_\_ 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

\_\_\_\_\_ 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.

**Table of Contents****DILUTION**

Purchasers of 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 September 30, 2010 was approximately \$3,345,000, or approximately \$0.04 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 September 30, 2010.

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 \_\_\_\_ 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 September 30, 2010 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 September 30, 2010	\$ 0.04
Increase in net tangible book value per share attributable to this offering	
Net tangible book value per share as of September 30, 2010, after giving effect to this offering	
Dilution in net tangible book value per share to new investors	

Investors 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 September 30, 2010 and excludes, as of September 30, 2010:

12,533,089 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 \$1.32 per share;

2,897,178 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;

\_\_\_\_\_ 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



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\_\_\_\_\_ 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.

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 new investors 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 compound is CX1739, which currently is 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. CX717 was included in the assets acquired by Biovail in March 2010.

Our AMPAKINE compound CX1739 is substantially more potent than CX717 in animal studies. CX1739 has successfully completed human Phase I clinical trials and more recently completed testing in a Phase II trial in the U.K. for the treatment of sleep apnea. We are currently analyzing the results from the sleep apnea trial. Given the positive results previously demonstrated with CX717 in adults with ADHD, we plan to initiate a Phase II study with CX1739 as a potential treatment for ADHD.

Although CX1739 was acquired by Biovail in our March 2010 transaction, certain rights to AMPAKINE compounds sold to Biovail were retained by us through a grant back license from Biovail. Specifically, Biovail's rights to CX1739 are limited to an intravenous dosage form to treat respiratory depression or vaso-occlusive crises associated with sickle cell disease. Consequently, following the transaction we retained our exclusive rights to pursue the development of CX1739 in a non-intravenous dosage form and certain of the other subject AMPAKINE compounds for indications other than the treatment of respiratory depression or vaso-occlusive crises associated with sickle cell disease.

The structure of the transaction with Biovail permits us to pursue the development of CX1739 and certain other of the acquired AMPAKINE compounds as a potential treatment for sleep apnea disorders, ADHD and other indications. Additionally, we retained all composition of matter patent rights for the compounds in the 2007 and 2076 patent series.

Additional drug candidates are being readied for further development, including AMPAKINE compounds CX2007 and CX2076. These compounds exhibit a significantly increased metabolic half-life in animals, which may ultimately result in a once-a-day treatment potential in humans. This further development will be dependent upon obtaining additional financial resources to conduct such studies.

We have filed several new patents for our AMPAKINE compounds that, if granted, will provide patent protection for our new compounds up to 2028.

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 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.

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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.

Revenues from milestone payments are recognized when earned, as evidenced by written acknowledgement from the collaborator, provided that (i) the milestone event is substantive and its achievement was not reasonably assured at the inception of the agreement, and (ii) the Company's performance obligations, if any, after the milestone achievement will continue to be funded by the collaborator at a comparable level to that before the milestone was achieved. If both of these criteria are not met, the milestone payment would be recognized over the remaining minimum period of the Company's performance obligations under the arrangement.

We record 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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As of September 30, 2010, there was approximately \$233,000 of total unrecognized compensation cost related to non-vested share-based compensation arrangements. These non-cash costs are expected to be recognized over a weighted-average period of 1.3 years.

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.

### **Results of Operations**

#### ***General***

In January 1999, we entered into a research collaboration and exclusive worldwide license agreement with NV Organon, or Organon, to enable Organon to develop and commercialize our AMPAKINE technology for the treatment of schizophrenia and depression. In connection with the agreement, we received payments approximating \$14,000,000, including an up-front payment, research support and milestone payments. In November 2007, Organon was acquired by Schering-Plough Corporation. Subsequently, in November 2009, Merck Sharpe & Dohme Corp., or Merck, acquired Schering-Plough Corporation. Following the merger with Schering-Plough, in September 2010 Merck notified us that it would not be proceeding further with the 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 compounds developed by Organon or developed jointly by Organon and us during the collaboration, but no longer has rights to use our patents or know-how. We are free to pursue strategic opportunities for all of our other AMPAKINE compounds in schizophrenia and depression.

In October 2000, we entered into a research collaboration agreement and a license agreement with Les Laboratoires Servier, or Servier. The agreements will allow 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. The indications covered include, but are not limited to, Alzheimer's disease, mild cognitive impairment, sexual dysfunction and the dementia associated with multiple sclerosis and Amyotrophic Lateral Sclerosis. The research collaboration agreement, as amended, included an up-front payment by Servier of \$5,000,000 and research support payments of approximately \$2,025,000 per year through early December 2006 (subject to us providing agreed-upon levels of research personnel). In early December 2006, we terminated the research collaboration with Servier and as a result the worldwide rights for the AMPAKINE technology for the treatment of neurodegenerative diseases were returned to us, other than three compounds selected by Servier for commercialization in its territory. In November 2010, Servier selected a jointly discovered AMPAKINE compound to advance into Phase I clinical testing. Should the compound be successfully commercialized by Servier, the Company would receive payments based upon key clinical development milestones and royalty payments on sales in licensed territories.

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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, we will have 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 retain 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 retain 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 merged with Valeant. As a result of Valeant's merger and changes in strategic directions for the combined company, Valeant announced its intent to exit several therapeutic development programs, including the respiratory depression project acquired from the Company. The Company is in discussions with Valeant regarding the future of the project and under the agreement between the Company and Biovail, all contractual obligations remain in place.

From inception (February 10, 1987) through the quarter ended on September 30, 2010, we have sustained losses aggregating approximately \$113,151,000. Continuing losses are anticipated over the next several years. During that time, our ongoing operating expenses will only be offset, if at all, by proceeds from governmental and other grants and by possible milestone payments from Servier and Biovail. Ongoing operating expenses may also be funded by payments 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 and Biovail agreements 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 be dependent upon the successful introduction of a new product into the North American market from our internal development, as well as the successful commercial development of our products by Servier or our other prospective partners to attain profitable operations from royalties or other product-based revenues.

### *Comparison of the Three Months and Nine Months ended September 30, 2010 and 2009*

For the three months ended September 30, 2010, our net loss applicable to common stock of approximately \$528,000 compares with a net loss applicable to common stock of approximately \$3,243,000 for the corresponding prior year period, a decrease of approximately 84%.

For the nine months ended September 30, 2010, our net income applicable to common stock of approximately \$2,613,000 compares with a net loss applicable to common stock of approximately \$9,189,000 for the corresponding prior year period.

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Revenues for the current year periods 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.

Revenues for the current year periods also include amounts awarded by the Michael J. Fox Foundation for Parkinson's Research in July 2010. 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.

Our research and development expenses for the three-month period ended September 30, 2010 decreased from approximately \$846,000 to approximately \$777,000, or by 8%, from the corresponding prior year period due to a decrease in non-cash stock compensation charges, as explained more fully below.

For the nine months ended September 30, 2010, our research and development expenses decreased from approximately \$4,009,000 to approximately \$3,347,000, or by 17%, 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. We recently completed testing with the compound in the sleep apnea study and are analyzing the related data. Total external preclinical and clinical development expenses for CX1739 totaled approximately \$258,000 and \$964,000 for the nine months ended September 30, 2010 and 2009, respectively.

Our AMPAKINE CX717 was included in our transaction that we completed with Biovail in March 2010. External preclinical and clinical development costs for CX717 for the nine months ended September 30, 2010 and 2009 totaled approximately \$100,000 and \$105,000, respectively, with amounts for the 2010 period reflecting costs triggered by our transaction with Biovail. External preclinical expenses to date through September 30, 2010 for CX717 and CX1739 amounted to approximately \$16,000,000 and \$3,000,000, respectively.

Other external preclinical expenses for the nine months ended September 30, 2010 and 2009 for less advanced AMPAKINE compounds totaled approximately \$30,000 and \$15,000, respectively. In total, our external clinical and preclinical expenses for the nine months ended September 30, 2010 and 2009 approximated \$388,000 and \$1,084,000, 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 \$2,901,000 and \$2,703,000 for the nine months ended September 30, 2010 and 2009, respectively.

Of these totals, as mentioned above, amounts for the 2010 period include \$940,000 of sublicense fees related to our transaction with Biovail. Other costs related to the access and protection of our AMPAKINE technology totaled approximately \$479,000 for the nine months ended September 30, 2010, which amounts were materially consistent with those for the corresponding prior year period. Expenses for personnel, outside experts and consultants approximated \$1,100,000 and \$1,670,000 for the nine months ended September 30, 2010 and 2009, respectively. For the nine months ended September 30, 2010 and 2009, costs for laboratory facility and supply expenses were approximately \$382,000 and \$557,000, respectively.

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

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Our non-cash stock compensation charges related to research and development decreased from approximately \$84,000 for the three months ended September 30, 2009 to a credit of approximately \$5,000 for the three months ended September 30, 2010. For the nine months ended September 30, 2010, the non-cash stock compensation charges for research and development decreased from approximately \$222,000 to approximately \$58,000, or by 74%, compared with the corresponding prior year period, reflecting fluctuations in our stock price, the vesting schedules of earlier granted stock options and a decrease in options granted relative to the corresponding prior year period.

Our general and administrative expenses for the three-month period ended September 30, 2010 increased from approximately \$883,000 to approximately \$947,000, or by 7%, compared to the corresponding prior year period, due primarily to an increased use of advisory consultants to assist us in identifying strategic opportunities for the Company. For the nine months ended September 30, 2010, our general and administrative expenses increased from approximately \$2,851,000 to approximately \$3,677,000, or by 29% 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 the increased use of advisory consultants mentioned above.

For the three months ended September 30, 2010, our non-cash stock compensation charges within general and administrative expenses decreased from approximately \$116,000 to approximately \$62,000, or by 47%, relative to the corresponding prior year period. For the nine months ended September 30, 2010, these charges decreased from approximately \$234,000 to approximately \$208,000, or by 11%, relative to the corresponding prior year period, primarily due to the vesting schedules of earlier granted options.

Our net interest income for the three months ended September 30, 2010 of approximately \$3,000 compares with net interest income of approximately \$1,000 for the prior year period. For the nine months ended September 30, 2010, net interest expense of approximately \$555,000 compares with net interest income of approximately \$18,000 for the corresponding prior year period.

Net interest expense for the nine months ended September 30, 2010 includes interest on our convertible promissory note that we issued to Samyang Optics Co., Ltd., or 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. See Note 2 of Notes to Condensed Financial Statements, dated September 30, 2010.

The net losses applicable to common stock for the 2009 periods 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.

*Comparison of the Years ended December 31, 2009 and 2008*

For the fiscal year ended December 31, 2009, our net loss applicable to common stock decreased by 26% to approximately \$10,788,000 compared to a net loss applicable to common stock of approximately \$14,596,000 for the prior year. Consistent with the prior year, we had no revenues for the year ended December 31, 2009.

The net loss applicable to common stock for the year ended December 31, 2009 includes charges of approximately \$2,347,000 related to the beneficial conversion feature of our 0% Series E Convertible Preferred Stock and Series F Convertible Preferred Stock that we issued in April 2009 and July 2009, respectively. These non-cash charges relate to the accounting requirements for the difference between the fair value of our common stock and the effective conversion price of the preferred stock on the date of issuance of the preferred stock. Excluding these non-cash charges, the decrease in net loss applicable to common stock for the year ended December 31, 2009 reflects decreased research and development expenses, as explained more fully below.

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Our research and development expenses for the year ended December 31, 2009 decreased from approximately \$10,780,000 to approximately \$4,598,000, or by 57% from the prior year. The most significant decrease reflects external expenses during the prior year for clinical studies with AMPAKINE CX717 as a treatment for respiratory depression and preclinical development expenses for our AMPAKINE CX1739, which is now in human clinical testing. More specifically, the development of CX717 was slowed because of some potential preclinical toxicology effects that might limit its clinical applications to very short-term uses in humans. At the same time, we started development of a new compound with longer patent life, CX1739.

The total external preclinical and clinical development expenses for CX717 for the years ended December 31, 2009 and 2008 were approximately \$106,000 and \$1,473,000, respectively, with amounts for 2008 reflecting the substantial clinical work still underway at that time. For CX1739, total external preclinical and clinical development expenses totaled approximately \$1,021,000 and \$2,061,000 during the years ended December 31, 2009 and 2008, respectively.

Other external preclinical expenses for the years ended December 31, 2009 and 2008 for less advanced AMPAKINE compounds totaled approximately \$16,000 and \$337,000, respectively. In total, our external clinical and preclinical expenses for the years ended December 31, 2009 and 2008 approximated \$1,143,000 and \$3,871,000, 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 \$3,229,000 and \$6,187,000 for the years ended December 31, 2009 and 2008, respectively.

Of these totals, for the years ended December 31, 2009 and 2008, expenses for personnel, outside experts and consultants approximated \$1,956,000 and \$4,331,000, respectively. Salary and related expenses for our research and development personnel decreased relative to the prior year due to expenses for our President and Chief Executive Officer, Dr. Mark Varney. Before his appointment to President and Chief Executive Officer in August 2008, Dr. Varney served as our Chief Scientific Officer and Chief Operating Officer and his salary-related expenses were included in research and development. After his appointment in August 2008, Dr. Varney's salary related expenses have been recorded in general and administrative expenses. Salary and related expenses for our research and development personnel further decreased as a result of our reduction in force that we implemented in mid-March 2009.

Indirect costs allocated to research and development include laboratory facility and supply expenses, along with amounts related to the access and protection of our AMPAKINE technology. For the years ended December 31, 2009 and 2008, laboratory facility and supply expenses totaled approximately \$684,000 and \$1,272,000, respectively. For the year ended December 31, 2009, costs related to the access and protection of our AMPAKINE technology approximated \$589,000 and were materially unchanged from such expenses for the prior year period.

The difference in unallocated costs between 2009 and 2008 reflects the reduction in the clinical development of CX717 and the start-up of the new compound, CX1739, as well as early work on preclinical development of other potential drug candidates. Early preclinical development costs are usually much lower than when a compound is moved into clinical development, where costs to conduct human trials are substantially greater. At this time, we are just beginning the clinical development of CX1739 and developing other preclinical back candidates. As the clinical development of CX1739 expands, our research and development costs are anticipated to increase significantly.

Our non-cash stock compensation charges related to research and development for the year ended December 31, 2009 decreased from approximately \$722,000 to approximately \$226,000, or by 69% compared to the prior year, as a result of fluctuations in our stock price and the vesting schedules of granted stock options.



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Our general and administrative expenses for the year ended December 31, 2009 decreased from approximately \$4,259,000 to approximately \$3,737,000, or by 12%, relative to the prior year. The decrease in expenses primarily reflects decreased non-cash stock-based compensation charges, savings from earlier implemented salary reductions for our executive officers and prior year consulting fees for market research in the field of respiratory depression.

Our non-cash stock compensation charges related to general and administration for the year ended December 31, 2009 decreased from approximately \$577,000 to approximately \$347,000, or by 40%, relative to the prior year, as a result of fluctuations in our stock price.

Net interest income for the year ended December 31, 2009 decreased to approximately \$17,000 from approximately \$443,000, or by 96%, compared to the prior year due to a decrease in cash available for investing activity.

*Comparison of the Years ended December 31, 2008 and 2007*

For the fiscal year ended December 31, 2008, our net loss increased by 13% to approximately \$14,596,000 compared to a net loss of approximately \$12,969,000 for the prior year. Consistent with the prior year, we had no revenues for the year ended December 31, 2008.

Our research and development expenses for the year ended December 31, 2008 increased from approximately \$9,327,000 to approximately \$10,780,000, or by 16% from the prior year. Most of the increase represented clinical development expenses for our two Phase IIa trials of AMPAKINE CX717 as a treatment for respiratory depression and the initiation of clinical development of AMPAKINE CX1739. Total clinical development expenses for CX717 approximated \$1,201,000 and \$102,000 for the years ended December 31, 2008 and 2007, respectively. For the same periods, preclinical development expenses for CX717 totaled approximately \$272,000 and \$415,000, respectively.

Early preclinical and clinical development for CX1739 totaled approximately \$2,061,000 and \$118,000 for the years ended December 31, 2008 and 2007, respectively. Other external preclinical expenses for less advanced AMPAKINE compounds totaled approximately \$337,000 and \$1,368,000 for the years ended December 31, 2008 and 2007, respectively.

In total, our external clinical and preclinical expenses for the years ended December 31, 2008 and 2007 approximated \$3,871,000 and \$2,003,000, 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 \$6,187,000 and \$5,953,000 for the years ended December 31, 2008 and 2007, respectively.

Of these totals, for the year ended December 31, 2008 expenses for personnel, outside experts and consultants approximated \$4,331,000, and were materially unchanged from such expenses for the prior year period. Indirect costs allocated to research and development include laboratory facility and supply expenses, along with amounts related to the access and protection of our AMPAKINE technology. Costs for laboratory facilities and supply expenses totaled approximately \$1,272,000 and \$1,152,000 for the years ended December 31, 2008 and 2007, respectively. Expenses related to the access and protection of our AMPAKINE technology amounted to approximately \$584,000 and \$514,000 for the years ended December 31, 2008 and 2007, respectively.

Our non-cash stock compensation charges related to research and development for the year ended December 31, 2008 decreased from approximately \$1,371,000 to approximately \$722,000, or by 47%, relative to the prior year, which partially offset our increased clinical development expenses. The decreased non-cash stock compensation charges resulted from fluctuations in our stock price and the vesting schedules of granted stock options.

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Our general and administrative expenses for the year ended December 31, 2008 decreased slightly from approximately \$4,320,000 to approximately \$4,259,000, or by 1%, compared to the prior year. Our non-cash stock compensation charges produced most of this decrease. Our related charges decreased from approximately \$866,000 in the year ended December 31, 2007 to approximately \$577,000 in 2008. Increased personnel-related expenses partially offset the decrease and resulted from the appointment of our new President and Chief Executive Officer, Dr. Mark Varney, in mid-August 2008. Dr. Varney's salary and related expenses were previously included in research and development expenses while he served as our former Chief Scientific Officer and Chief Operating Officer.

Net interest income for the year ended December 31, 2008 decreased to approximately \$443,000 from approximately \$678,000, or by 35%, relative to the prior year, due to a decrease in cash available for investing.

**Liquidity and Capital Resources***Sources and Uses of Cash*

Pursuant to the terms of our transaction with Biovail in March 2010, Biovail paid us \$10,000,000, including \$1,000,000 received during the quarter ended September 30, 2010. In addition, we have 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, all of which are conditioned upon the occurrence of particular events relating to the clinical development of those certain assets that were transferred to Biovail in connection with the transaction.

Under the agreements signed with Servier in October 2000, as amended to date, in November 2010 Servier selected the jointly discovered high impact AMPAKINE compound, S47445, to advance into Phase I clinical trials. We remain eligible to receive payments based upon defined clinical development milestones of the licensed compound and royalties on sales in licensed territories.

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 September 30, 2010 that were issued in connection with prior offerings and placements of our common stock.

Date of Issuance	Exercise Price per Share	Number of Warrants		Expiration Date	Approximate Potential Proceeds, if Fully Exercised
		Outstanding as of September 30, 2010			
January 2007 <sup>(1)</sup>	\$ 1.66	2,996,927		January 21, 2012	\$ 4,975,000
August 2007 <sup>(1)</sup>	\$ 2.64	2,830,000		August 28, 2012	\$ 7,471,000
August 2007 <sup>(2)</sup>	\$ 3.96	176,875		August 28, 2012	\$ 700,000
April 2009 <sup>(1)</sup>	\$ 0.27	6,941,176		October 17, 2012	\$ 1,889,000
April 2009 <sup>(2)</sup>	\$ 0.26	433,824		October 17, 2012	\$ 113,000
July 2009 <sup>(1)</sup>	\$ 0.27	6,060,470		January 31, 2013	\$ 1,636,000
July 2009 <sup>(2)</sup>	\$ 0.37	606,047		January 31, 2013	\$ 222,000
June 2010 <sup>(1)(3)</sup>	\$ 0.21	4,081,633		June 7, 2012	\$ 841,000

<sup>(1)</sup> Represents warrants issued to the investor(s) in the related transaction.

<sup>(2)</sup> Represents warrants issued to the placement agent(s) in the related transaction.

<sup>(3)</sup> See Note 2 to Notes to Condensed Financial Statements, dated September 30, 2010.

The warrants issued to the investor in April 2009 were originally issued at an exercise price of \$0.3401 per share. In February 2010, the exercise price of these warrants was reduced to \$0.2721 in exchange for the investor's consent and waiver with respect to the Company's completed financing transaction with Samyang in January 2010 (see Note 2 to Notes to Condensed Financial Statements, dated September 30, 2010).

All of the 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.



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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 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.

None of the warrants detailed above are in-the-money as of September 30, 2010. We can give no assurance that we will receive proceeds from the exercise of any of the outstanding warrants.

As of September 30, 2010, we had cash, cash equivalents and marketable securities totaling approximately \$4,508,000 and working capital of approximately \$3,047,000. In comparison, as of December 31, 2009, we had cash, cash equivalents and marketable securities of approximately \$226,000 and a working capital deficit of approximately \$1,976,000. The increases in cash and working capital primarily reflect amounts received from our March 2010 transaction with Biovail, as detailed above, as partially offset by amounts required to fund our operations.

For the nine months ended September 30, 2010, net cash provided by operating activities was approximately \$2,810,000 and included our net income for the period of approximately \$2,613,000, adjusted for non-cash expenses for depreciation, amortization, warrants and stock compensation approximating \$867,000, and changes in operating assets and liabilities. Net cash used in operating activities was approximately \$6,003,000 during the nine months ended September 30, 2009, and included our net loss for the period of approximately \$6,842,000, adjusted for non-cash expenses for depreciation and stock compensation approximating \$602,000, and changes in operating assets and liabilities.

For the nine months ended September 30, 2010, net cash used in investing activities approximated \$2,250,000 and primarily represented the purchases of marketable securities, partially offset by some maturities of such marketable securities. Net cash provided by investing activities approximated \$2,714,000 during the nine months ended September 30, 2009, and represented the proceeds from the sales and maturities of marketable securities, partially offset by minimal fixed asset purchase and sale activity.

Net cash provided by financing activities approximated \$1,472,000 during the nine months ended September 30, 2010 and resulted from our private placement of a convertible promissory note in January 2010. For the nine months ended September 30, 2009, net cash provided by financing activities approximated \$2,940,000 due to our registered direct offering of our 0% Series E Convertible Preferred Stock in April 2009 and our private placement of our Series F Convertible Preferred Stock in July 2009.

In October 2010, we were awarded a grant of approximately \$245,000 under a program created by the U.S. Congress in the Patient Protection and Affordable Care Act of 2010. The grant reimburses certain qualifying research expenses related to our AMPAKINE CX1739.

*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 three months of the year ended December 31, 2010, the year ending December 31, 2011 and the five months ending May 31, 2012 are approximately \$141,000, \$581,000 and \$248,000, respectively.

In addition to amounts reflected on the balance sheet as of September 30, 2010, our remaining commitments for preclinical and clinical studies amount to approximately \$423,000, including approximately \$155,000 for research related to the grant from the Michael J. Fox Foundation for Parkinson's Research, which costs will be covered by funds awarded but not yet received under the grant.

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In March 2009, each of our executive officers agreed to a 20% reduction in their base salary in an effort to conserve our available financial resources. Following the closing of the transaction with Biovail in March 2010 (see Note 3 to Notes to Condensed Financial Statements, dated September 30, 2010), the Compensation Committee of our Board of Directors approved the reinstatement of the prior base salary for each of the executive officers, effective June 1, 2010. However, the Compensation Committee did not approve the payment of any shortfall in salaries for such executive officers from the time the reductions were implemented to the date the base salary levels were reinstated. Subject to the discretion of the Compensation Committee, it is possible that some of the shortfall amounts will be paid to the executive officers in the future, but the timing and amount of any such payments cannot be reasonably estimated at this time.

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, we will not be required to repay the advance unless 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 11 full-time employees. We do not anticipate significant increases in the number of our full-time employees within the coming year.

### *Outlook*

With the proceeds from our transaction with Biovail in March 2010, as discussed more fully above, we believe that we have adequate financial resources to conduct our operations into the second 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 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.

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*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 February 8, 2002, 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 compound is CX1739, which is 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 Schering-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 to date, will allow 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 are 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 to advance into Phase I clinical testing. Should the compound be successfully commercialized by Servier, the Company would receive payments based upon key clinical development milestones and royalty payments on sales in licensed territories.

On March 25, 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, we will have 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 retain 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 retain 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 merged with Valeant. As a result of Valeant's merger and changes in strategic directions for the combined company, Valeant announced its intent to exit several therapeutic development programs, including the respiratory depression project acquired from the Company. The Company is in discussions with Valeant regarding the future of the project and under the agreement between the Company and Biovail, all contractual obligations remain in place.

For the years ended December 31, 2009, 2008 and 2007, our research and development expenses were approximately \$4,598,000, \$10,780,000 and \$9,327,000, respectively. The significant decrease in expenses for the year ended December 31, 2009 reflects our reduction in force that was implemented in March 2009, in an effort to reduce our operating expenses and focus our resources on the clinical development of our AMPAKINE platform. Expenses for the year ended December 31, 2008 reflect an increase in clinical development expenses, including our two Phase IIa studies with CX717 for the acute treatment of respiratory depression induced by an opioid and the initiation of clinical development of CX1739.

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 and have incurred cumulative net losses from inception approximating \$113,151,000 through September 30, 2010. We do not anticipate profitability in the short term and will continue to require external funding, either 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.



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Our website is [www.cortexpharm.com](http://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 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 filing of patent applications that, if granted, will provide patent protection for our new molecules through 2029.

#### **Low Impact AMPAKINE Platform**

Prior to the transaction we entered into with Biovail on March 25, 2010, we had two low impact AMPAKINE compounds being tested in clinical studies: CX717 and CX1739. Following the sale of CX717 to Biovail, our most advanced low impact AMPAKINE compound is CX1739, which is a new generation low impact AMPAKINE molecule. The pending patent application that specifically covers CX1739, if approved, will provide a patent term until 2028.

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.

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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.

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 sleep apnea in the UK. 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. We recently completed testing in this study and are currently analyzing the related results.

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.

Although CX1739 was acquired by Biovail in our March 2010 transaction, certain rights to AMPAKINE compounds sold to Biovail were retained by the Company through a grant back license from Biovail. Specifically, Biovail's rights to CX1739 are limited to an intravenous dosage form to treat respiratory depression or vaso-occlusive crises associated with sickle cell disease. Consequently, following the transaction we retained our exclusive rights to pursue the development of CX1739 in a non-intravenous dosage form and certain of the other subject AMPAKINE compounds for indications other than the treatment of respiratory depression or vaso-occlusive crises associated with sickle cell disease. The structure of the transaction with Biovail permits us to pursue the development of CX1739 and certain other of the acquired AMPAKINE compounds as a potential treatment for sleep apnea disorders, ADHD and other indications.

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 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 through 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, the use of CX929 to treat these mice has demonstrated an improvement in motor deficits that occur in mice that have not been treated with CX929. 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, 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.

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**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.

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.

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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.

Under the agreements that we signed with Servier in October 2000, as amended to date, the collaborative research phase of the agreement ended in December 2006. As a result of this termination, we regained the worldwide rights for the use of AMPAKINE compounds for treatment of (i) declines in cognitive performance associated with aging, (ii) neurodegenerative disorders and (iii) anxiety disorders. Servier subsequently selected three AMPAKINE compounds for potential development and commercialization. In November 2010, Servier selected a jointly discovered high impact AMPAKINE compound to advance into Phase I clinical testing. Should the compound be successfully commercialized by Servier, the Company would receive payments based upon key clinical development milestones and royalty payments on sales in licensed territories.

### *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 and Effexor, 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).

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Animal studies have demonstrated antidepressant effects of AMPAKINE molecules. For example, AMPAKINE molecules have demonstrated efficacy comparable to that of SSRI and tricyclic antidepressants in 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 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.

### *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.

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In 2009, we initiated a pilot clinical study in patients previously diagnosed with sleep apnea to evaluate the ability of CX1739 to reduce the number of apnea events and improve blood oxygen saturation. Due to our financial constraints, enrollment in the study was slower than expected. We recently completed testing in the sleep apnea trial and are currently analyzing the related results.

### *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 through 2028.

## **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, we incurred certain license fees payable to the University. Of the patents licensed from the University, the date for the last to expire issued patent is January 2025.

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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 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 through 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 have subsequently filed a formal appeal of the EPO's decision. The revocation decision does not take effect until any appeal is concluded, and that process may take several years to resolve.

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.

For both patent appeals, there are no timeframes 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. The legal process may continue for most of the remaining life of the earlier patent, given that the European patent expires in 2013. We do not believe that the European decisions for either patent are material to the future of our AMPAKINE technology given these patents' limited life for commercial protection.

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 to pharmaceuticals in general and more critical to our commercial protection worldwide. AMPAKINE CX717 was acquired by Biovail in our March 2010 transaction, along with certain rights to CX1739. Specifically, Biovail's rights to CX1739 are limited to an intravenous dosage form to treat respiratory depression or vaso-occlusive crises associated with sickle cell disease. The structure of the transaction with Biovail permits us to pursue the development of CX1739 as a potential treatment for sleep apnea disorders, ADHD and other indications. CX1739 is included in composition of matter claims in pending applications filed in the U.S. and worldwide. If issued, this patent family 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 plan to file an IND for CX1739. It is our intent that Servier, Biovail 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. 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.



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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 agreements with Servier and Biovail, 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 11 full-time employees, including five Ph.D.-level or equivalent employees. Of the full-time employees, seven are engaged in management and administrative support and the remainder is engaged in research and development.

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.

**Table of Contents****MANAGEMENT****Directors**

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

<b>Name</b>	<b>Age</b>	<b>Director Since</b>	<b>Principal Occupation</b>
Robert F. Allnutt <sup>(1)(3)</sup>	74	1995	Senior Counselor, APCO Worldwide, Inc.
John F. Benedik <sup>(2)(3)</sup>	62	2005	Retired Senior Partner, Arthur Andersen LLP
Charles J. Casamento <sup>(1)(2)</sup>	64	1997	Principal and Executive Director, The Sage Group, Inc.
Carl W. Cotman, Ph.D. <sup>(4)</sup>	70	1991	Professor of Neurology and Neurobiology and Behavior, University of California at Irvine; Co-Founder, Scientific Director and Consultant to the Company
Peter F. Drake, Ph.D. <sup>(2)(3)</sup>	56	2003	Managing General Partner, Mayflower Partners
M. Ross Johnson, Ph.D. <sup>(1)(4)</sup>	65	2002	President and Chief Executive Officer, Parion Sciences, Inc.
Roger G. Stoll, Ph.D.	68	2002	Executive Chairman of the Company
Mark A. Varney, Ph.D. <sup>(4)</sup>	44	2007	President and Chief Executive Officer of the Company

<sup>(1)</sup> Member of Compensation Committee

<sup>(2)</sup> Member of Audit Committee

<sup>(3)</sup> Member of Governance and Nominations Committee

<sup>(4)</sup> 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 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 currently serves as Vice Chair of the board of directors of the American Hospice Foundation. He previously served 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 a federal agency at NASA 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.

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*John F. Benedik* was appointed to the 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 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 and Chief Executive Officer 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, 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, 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, Pharmaceuticals 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 audit committee of Supergen, Inc., a publicly held pharmaceutical company, and he serves on the board of directors and 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. Since 1995 he has also been the Director of the Institute for Brain Aging and Dementia at the University of California, Irvine. 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 College, an M.A. in Analytical Chemistry from Wesleyan University, and a Ph.D. in Biochemistry from Indiana University.

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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, Penwest Pharmaceuticals, a publicly traded drug delivery company, 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 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.

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*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 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.

**Table of Contents****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:

<b>Name</b>	<b>Age</b>	<b>Position with Company</b>
Roger G. Stoll, Ph.D.	68	Executive Chairman
Mark A. Varney, Ph.D.	44	President and Chief Executive Officer
Maria S. Messinger	43	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.

**Other Key Employees**

*Leslie J. Street, Ph.D.*, was appointed Senior Director of Medicinal Chemistry in March 2007. From October 2006 to January 2007, Dr. Street was the Senior Director and Head of Medicinal Chemistry at Renovis, Inc., a biopharmaceutical company engaged in the discovery and development of drugs to address neurological conditions and neuroinflammatory disorders. From March 2006 to August 2006, he served as a consultant to Neurocrine Biosciences, Inc., a biopharmaceutical company focused on the discovery and development of therapeutics to treat diseases and disorders of the central nervous system. From October 1985 to March 2006, Dr. Street conducted research at Merck's Neuroscience Research Center in the U.K., a division of Merck, Inc., with his most recent position as Distinguished Senior Investigator of Medicinal Chemistry. During his tenure at Merck, Dr. Street was focused on drug discovery programs for treating migraine, cognitive disorders, anxiety and schizophrenia. He led medicinal chemistry teams that were successful in advancing several clinical candidates in the central nervous system disease area, including the anti-migraine drug Rizatriptan (MAXALT®), which was approved by the Food and Drug Administration in 1998. Dr. Street has published nearly 50 peer-reviewed manuscripts and over 80 patents. He received his B.S. and his Ph.D. in Chemistry from Leeds University in the U.K.





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### **Scientific Consultants**

The key scientific consultant to the Company is Gary S. Lynch, Ph.D. Arvid M. Carlsson, M.D., Ph.D. serves as a consultant to the Board of Directors.

*Gary S. Lynch, Ph.D.*, 66, is a co-founder of the Company. He has been a Scientific Director of and consultant to the Company since October 1987 and served as a director of the Company from March 1988 to March 1989 and again from December 1994 to December 1995. Dr. Lynch has been a Professor in the Department of Psychiatry at the University of California, Irvine since 1981, and has held various other teaching and research positions at that University since 1969. Dr. Lynch has authored or co-authored nearly 600 research publications in the areas of neurobiology, cognition and memory. Dr. Lynch holds a B.A. from the University of Delaware and a Ph.D. from Princeton University.

*Arvid Carlsson, M.D., Ph.D.*, 87, has been a consultant to the Company since April 2002. A co-recipient of the 2000 Nobel Prize for Medicine, Dr. Carlsson is Professor Emeritus at the University of Göteborg, and is a member of the Swedish Academy of Sciences and a foreign affiliate of the U.S. National Academy of Sciences. Dr. Carlsson has authored several hundred articles, which have helped to form the basis of modern neuropsychopharmacology. In 1975, he was elected as a Foreign Corresponding Fellow of The American College of Neuropsychopharmacology. In addition to the Nobel Prize, he has been the recipient of The Japan Prize in Psychology and Psychiatry, The Research Prize of the Lundbeck Foundation (Denmark) and the Lieber Prize (USA) for research in schizophrenia. He was also the recipient of the Legion of Honour (France). Dr. Carlsson's memberships include Member of the Academia Europaea, Member of the Royal Swedish Academy of Sciences, Honorary Fellow of the World Federation of Societies of Biological Psychiatry, Honorary Foreign Associate of the Institute of Medicine, National Academy of Sciences, U.S.A. and Honorary Member of the German Society of Biological Psychiatry. Dr. Carlsson received his M.D. and Ph.D. in Pharmacology from the University of Lund, Sweden.

### **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.

## **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.

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<b>Name and Principal Position</b>	<b>Year</b>	<b>Salary (\$)</b>	<b>Bonus (\$)</b>	<b>Stock Awards (\$)<sup>(1)</sup></b>	<b>Option Awards (\$)<sup>(2)</sup></b>	<b>All Other Compensation (\$)<sup>(3)</sup></b>	<b>Total (\$)</b>
Roger G. Stoll, Ph.D. Executive Chairman	2010	\$ 338,218			\$		\$ 338,218
	2009	\$ 305,250			\$ 93,552		\$ 398,802
	2008	\$ 370,000			\$ 87,280	\$	\$ 457,280
Mark A. Varney, Ph.D. President and Chief Executive Officer	2010	\$ 330,905	\$ 30,000		\$	\$ 49,600 <sup>(4)</sup>	\$ 410,505
	2009	\$ 298,650			\$ 97,706	\$ 68,800 <sup>(5)</sup>	\$ 465,156
	2008	\$ 347,277			\$ 241,933	\$ 88,000 <sup>(6)</sup>	\$ 677,210
Maria S. Messinger, CPA Vice President, Chief	2010	\$ 222,127	\$ 30,000		\$		\$ 252,127
	2009	\$ 200,475					