

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended December 31, 2008

OR

Transition Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Commission file number 1-16467

Cortex Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation or organization)

33-0303583
(I.R.S. Employer Identification Number)

15241 Barranca Parkway, Irvine, California, 92618
(Address of principal executive offices, including zip code)

(949) 727-3157
(Registrant's telephone number, including area code)

Securities registered under Section 12(b) of the Act:

Common Stock, \$0.001 par value
(Title of Class)

NYSE Amex
(Name of Exchange on which Registered)

Securities registered under Section 12(g) of the Act: None

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ___
NO

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act.
YES ___ NO

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act during the preceding 12 months (or for such shorter period that the registrant was required to file such reports); and (2) has been subject to such filing requirements for the past 90 days. YES NO ___

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ___ ___

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

Large accelerated filer ___

Accelerated filer ___

Non-accelerated filer ___

Smaller reporting company

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Exchange Act Rule 12b-2). YES ___ NO

The aggregate market value of the voting stock held by non-affiliates as of June 30, 2008 was approximately \$37,975,600 (based on the closing sale price of the common stock as reported by the NYSE Amex (formerly The American Stock Exchange) on such date). As of April 10, 2009, there were 47,615,209 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

NONE

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In this Annual Report on Form 10-K, the terms “Cortex,” the “Company,” “we,” “us” and “our” refer to Cortex Pharmaceuticals, Inc., a Delaware corporation.

INTRODUCTORY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains certain 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 (the “Exchange Act”) and we intend that such forward-looking statements be subject to the safe harbors created thereby. These forward-looking statements, which may be identified by words including “anticipates,” “believes,” “intends,” “estimates,” “expects,” “plans,” and similar expressions include, but are not limited to, statements regarding (i) future research plans, expenditures and results, (ii) potential collaborative arrangements, (iii) the potential utility of our proposed products and (iv) the need for, and availability of, additional financing.

The forward-looking statements included herein are based on current expectations that involve a number of risks and uncertainties. These forward-looking statements are based on assumptions regarding our business and technology, which involve judgments with respect to, among other things, future scientific, economic and competitive conditions, and future business decisions, all of which are difficult or impossible to predict accurately and many of which are beyond our control. Although we believe that the assumptions underlying the forward-looking statements are reasonable, actual results may differ materially from those set forth in the forward-looking statements. In light of the significant uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as representation by us or any other person that our objectives or plans will be achieved. We do not undertake and specifically decline any obligation to update any forward-looking statements or to publicly announce the results of any revisions to any statements to reflect new information or future events or developments.

PART I

Item 1. Business

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 CX717, 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 (“MCI”), Attention Deficit Hyperactivity Disorder (“ADHD”), schizophrenia, depression, respiratory depression caused by opiate analgesics, and possibly 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 (the “FDA”) is usually applied to products where the number of patients in the United States (“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, Cortex estimates 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 the Company’s 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.

While not an Orphan Drug indication, the acute treatment of respiratory depression represents an additional market that we may potentially pursue internally. However, we will continue to evaluate related partnership opportunities for the indication. Based upon results from our two Phase IIa studies with CX717, we believe that pre-administration of an AMPAKINE compound may prevent opiate-induced respiratory depression, while preserving the opiate’s pain relieving effects. As a result, an AMPAKINE compound may improve the safety margin for giving powerful pain relievers following surgical procedures, and thereby provide a valuable tool for anesthesiologists and surgeons to optimize pain management in their patients. Recent research estimates that such a product, including use of an AMPAKINE compound as a prevention or rescue therapy for respiratory depression, may exceed \$1.2 billion in U.S. sales alone.

In January 1999, we entered into a research collaboration and exclusive worldwide license agreement with NV Organon (“Organon”), at that time a subsidiary of Akzo Nobel. The agreement grants 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 March 2009, Merck & Co. Inc. entered into a definitive merger agreement with Schering Plough. Schering-Plough is currently in Phase II studies with two collaboration AMPAKINE compounds, ORG2448 and ORG26576. Cortex would receive milestone for continued clinical advancement of these compounds, and royalties following their successful commercialization.

In October 2000, we entered into a research collaboration agreement and a license agreement with Les Laboratoires Servier (“Servier”). The license agreement, as amended to date, will allow Servier to develop and commercialize up to 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, and as a result 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. While both the Organon and Servier research

collaborations have ended, we remain eligible for milestone payments based upon defined clinical development milestones of the licensed compounds, as well as royalties based upon potential commercialization under our licenses from both partners.

For the years ended December 31, 2008, 2007 and 2006, our research and development expenses were approximately \$10,780,000, \$9,327,000 and \$13,262,000, respectively. Expenses for the year ended December 31, 2008 reflect an increase in clinical development expenses, including our two Phase IIa studies that evaluated the effect of CX717 for the acute treatment of respiratory depression induced by an opioid and the initiation of clinical development of CX1739. Decreased expenses for the year ended December 31, 2007 primarily resulted from the earlier clinical hold on CX717 that was lifted in July 2007. Costs related to toxicological studies performed in response to the clinical hold contributed to the expenses for the year ended December 31, 2006.

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 net losses approximating \$107,323,000 through December 31, 2008. 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 17.

Our executive offices are located at 15241 Barranca Parkway, Irvine, California 92618, and our telephone number is (949) 727-3157.

Our website is www.cortexpharm.com. We make available free of charge through our website our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and all amendments to those reports as soon as practicable after such material is electronically filed with the Securities and Exchange Commission (the "SEC").

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 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, there is evidence that the high impact compounds activate the expression of certain genes in the neuron, including the production of neurotrophins such as Brain-Derived Neurotrophic Factor ("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

Our most advanced low impact AMPAKINE compounds are CX717 and CX1739, both of which are in Phase II clinical development. During 2008, we initiated Phase I clinical trials with CX1739, which is structurally different than CX717, and approximately three times more potent. The Phase I studies were completed in early 2009, and subsequently a Phase IIa study was initiated with CX1739 in sleep apnea. Anticipated top-line results from that study are expected in mid-2009. Also in mid-2009, we anticipate commencing a second Phase II study with CX1739 for the potential treatment for ADHD, although this will be dependent upon bringing in additional capital.

CX717

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

Several Phase II studies have been completed with CX717. These included two sleep deprivation studies and a study in adults with ADHD. A positron emission tomography ("PET") scan study in Alzheimer's disease patients has restarted, and two Phase II studies were completed during 2008 to investigate the ability of CX717 to prevent respiratory depression induced by an opiate analgesic.

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

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

properties of alfentanil were maintained in an acute pain model in the presence of CX717, whereas alfentanil's pain relieving properties were fully blocked by naloxone.

The second study, RD-02, was a randomized, double-blind, placebo-controlled, two-period crossover design in 24 healthy subjects with three doses of CX717 (8 subjects/dose). The objective of the study was to determine an optimal dose for the prevention of respiratory depression in humans. Top-line results from this study demonstrated that a single dose of either 900mg or 2100mg of CX717 has positive effects on respiratory depression induced by pain relieving opiates. Procedural difficulties were encountered in the 1500mg dose group that prevented a reliable measure of the primary endpoint. The primary performance measures for the study were derived from a CO₂ re-breathing procedure that measured the breathing response of the subject to increased CO₂ levels in the presence of alfentanil. The primary measure, the minute expiratory volume at 55mgHg CO₂ (V_{E55}), was reversed by 900mg and 2100mg of CX717 in comparison to placebo (p,0.04 and p<0.03, respectively).

Based upon the encouraging results from RD-01 and RD-02, we've proceeded with developing an intravenous dosage formulation of CX717, which would provide better treatment options in a hospital setting. We plan to undertake additional required animal safety and toxicology studies in 2009 and to continue human clinical testing with the new formulation shortly thereafter.

Regulatory Issues with CX717

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

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

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

CX1739

CX1739 is a new generation low impact AMPAKINE molecule. The pending patent application specifically covering CX1739, if approved, would expire in 2028. CX1739 completed pre-clinical safety and toxicology studies in 2008, and importantly, the toxicological artifact previously observed with CX717 in animals was not seen with CX1739. Phase I studies were initiated in 2008 and completed in early 2009. The safety and tolerability of the molecule was evaluated in 80 healthy, male volunteers. No changes were seen in vital signs, and there were no changes in the cardiovascular changes or blood chemistry up to single doses of 1200mg, and 600mg twice-a-day (for a 1200mg total daily dose) for 7

days. The well-tolerated maximum single dose was identified at 900mg and 450 mg twice-a-day (for a 900mg total daily dose) for 7 days.

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

In February 2009, a small proof-of-concept study was initiated in patients previously diagnosed with sleep apnea. This is a randomized, double-blind, placebo-controlled study in 20 subjects that is being performed in a sleep lab in the UK. Related top-line results are expected in mid-2009.

Given the positive results previously obtained with CX717 in adults with ADHD, we plan on initiating a Phase II study in adults with ADHD with CX1739. The start date is anticipated to be mid-2009, although this will be dependent on bringing in additional capital.

“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 demonstrated the potential to restore depressed levels of the growth factor BDNF, and improve deficits in a process known as hippocampal long-term potentiation, a cellular mechanism thought to underlie learning and memory. Furthermore, treating these mice with CX929 also has demonstrated an improvement in motor deficits that occur in untreated mice. This preclinical data therefore suggests that high impact AMPAKINE molecules might have beneficial effects in Huntington’s disease patients.

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, and is also seen in the genetically altered mice. We have found that AMPAKINE molecules can restore the breathing pattern to a more normal, regular breathing pattern in those mice. The other genetically altered mouse model exhibits many of the characteristics of Fragile X. The current data that has been generated in these mice 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.

See “Risk Factors – *Risks related to our business* – We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies” on page 20 for a discussion of certain risks related to the development and commercialization of our products, including, without limitation, risks related to our clinical trials.

Potential Applications for AMPAKINE Compounds

ADHD

ADHD is a common psychiatric disorder in both children and adults. The National Institute of Mental Health (“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. The disorder was historically thought of as a childhood illness. Longitudinal studies however have documented the persistence of symptoms into adulthood in a large percentage of childhood sufferers. The prevalence of ADHD is estimated at 2% to 4% of adults. 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 the disorder. Based upon data from IMS Health, in 2008, psychostimulants accounted for a global market of approximately \$5 billion. Because of the availability and frequent prescribing of psychostimulants, concerns over their potential overuse and abuse have intensified. Along with the abuse potential, treatments with 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. 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, 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.

Respiratory Depression

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

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

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

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

In May 2007, we entered into an exclusive patent license agreement with the University of Alberta to potentially broaden the use of our AMPAKINE technology to prevent and treat opiate- and barbiturate-induced respiratory depression. The related patent application filed by Dr. John Greer of the University of Alberta describes a method by which an AMPAKINE compound can reverse the respiratory depression associated with classes of commonly prescribed opiate analgesics and barbiturates. Dr. Greer has demonstrated in animal models that the respiratory depression induced by these agents can be reversed or prevented with an AMPAKINE, without a reduction of pain relief or sedation. We believe that this creates the opportunity to use an AMPAKINE compound in conjunction with commonly prescribed barbiturates or opiates to reduce the mortality caused by these adverse reactions. Preliminary animal data also suggests that an AMPAKINE compound may also reverse the respiratory depression effects of propofol (Diprivan[®]), a commonly used intravenous anesthetic agent.

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 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 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, resulting in improved quality of life and substantial savings in health care costs.

Alzheimer's disease is the most common form of dementia, currently afflicting some 4 million people in the U.S. and 12 million people worldwide. With the aging of our population, unless a treatment 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. society spends at least \$100 billion a year on Alzheimer's disease at an average lifetime cost per patient of \$174,000. Neither Medicare nor most private health insurance covers the long-term care more patients need. The impact of an effective treatment, even a symptomatic one, would be enormous.

It is in the early and middle stages of Alzheimer's disease that we believe AMPAKINE molecules may play a valuable role, enhancing the effectiveness of the brain cells and brain circuits that have not yet succumbed to the disease. This enhancement may help to alleviate the memory and cognitive deficits that constitute the major symptoms of Alzheimer's disease.

There is also a possibility that treatment with high impact AMPAKINE compounds may slow the progression of Alzheimer's disease. Brain cells, or neurons, require continued input from other brain cells to remain alive. As neurons die, other neurons begin to lose their inputs, hastening their own death. AMPAKINE compounds may slow the rate at which functional levels of input from other neurons are lost. In animal models, selected AMPAKINE compounds have been shown to increase the production of BDNF, which is a protein associated with the formation of synapses by neurons. This possible mode of action also may 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 with memory impairment beyond that 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 1-2% 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 Alzheimer's disease before undertaking studies with the compounds in MCI. Yet given the potential size of the MCI market, we remain interested in this indication.

Depression

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

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

In January 1999, we entered an exclusive worldwide license agreement with Organon that enables Organon to develop and commercialize the AMPAKINE compounds for the treatment of schizophrenia. The agreement with Organon included an option for a similar license in the field of depression.

In December 2003 Organon exercised its option to the depression field and currently has a Phase II study in bipolar depression underway at the NIMH. Organon is subject to annual spending requirements for research and development using AMPAKINE compounds in the depression field. The terms of the agreement also include milestone payments based upon clinical development and royalties on worldwide sales.

Schizophrenia

The worldwide incidence of schizophrenia is approximately 1.0% 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 January 1999, we entered into an exclusive worldwide license agreement with Organon. The agreement will enable Organon to develop and commercialize our proprietary AMPAKINE technology for the treatment of schizophrenia. Under the agreement, Organon has rights to intellectual property that includes broad medical use patents covering the use of any AMPA receptor modulating compound to treat schizophrenia as a mono-therapy, or in combination with other anti-psychotic medications.

Organon is currently conducting clinical testing of the AMPAKINE compound, ORG24448, in patients with schizophrenia. In May 2000, we achieved our first milestone under the related agreement when Organon selected a licensed compound to pursue in Phase I clinical testing, triggering a \$2,000,000 payment to us. In September 2001, Organon informed us of its intent to continue development of the selected compound by entering Phase II clinical testing, triggering a second \$2,000,000 milestone payment. Additional payments from the Organon agreement for schizophrenia will depend upon the drug successfully completing Phase II studies and the initiation of Phase III trials.

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 5 periods per hour of 10 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). Central sleep apnea is often made worse by central nervous system depressants such as alcohol and opioids. Mixed sleep apnea, the third type, is a combination of central and obstructive factors occurring in the same episode of sleep apnea.

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 ("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.

Cortex has 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. Top-line results from the related study are anticipated in mid-2009.

Other Indications

We may conduct studies in various other indications that have not been discussed above. In addition to the AMPAKINE CX717, we plan to advance other AMPAKINE compounds that have shown promise in animal models. During 2007 and 2008, we 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. See “Risk Factors – *Risks related to our business* – We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies” on page 20 for a discussion of certain risks related to the development and commercialization of our products.

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 schizophrenia. 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. Our worldwide licensing agreement with Organon (see Note 5 of Notes to Financial Statements) does not provide us with co-promotional rights. With respect to Orphan Drugs, we may distribute and market such products directly. See “Risk Factors – *Risks related to our business* – We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies” on page 20 for a discussion of 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 (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. Of the patents licensed from the University, the date for the last to expire patent is September 2017. See “Risk Factors – *Risks related to our business* – Our products rely on licenses from the Regents of the University of California, and if we lose access to these technologies, our business would be substantially impaired” on page 19 for a discussion of certain risks related to our licenses with the University.

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 22 patent families comprising over 180 issued or allowed U.S. and foreign patents and over 100 additional U.S. patent applications and their international counterparts pending. Over 130 of these are composition of matter patents that cover hundreds of our compounds. These patents form the foundation of the Company's 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 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 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 to us in Mexico, Australia and New Zealand.

In November 2003, a similar patent was issued to the University by the European Patent Office ("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 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 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 favor of Cortex, 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 because of these patents' limited life for commercial protection. Most importantly, we own a large portfolio of composition of matter patents with much longer patent lives that we believe are fundamental to pharmaceuticals in general and more critical to our commercial protection worldwide. 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. See “Risk Factors – *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” on page 21 for a discussion of certain risks related to the protection of our intellectual property rights.

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 (“IND”) filed with the FDA by our clinical collaborators. We filed an IND for the AMPAKINE CX717 in December 2004. It is our intent that Organon, Servier or another pharmaceutical company partner or partners that we are seeking, will pursue other required regulatory approvals to conduct further clinical testing with AMPAKINE compounds. However, we intend to file other IND’s (and equivalent regulatory filings outside of the U.S.) for additional AMPAKINE compounds to facilitate the development of our Orphan Drug strategy and the newer respiratory depression indications.

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.

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. See “Risk Factors – *Risks related to our industry* – 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” on page 22 for a discussion of certain risks related to the regulatory approval 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 licensing agreements with Organon and Servier, we intend to enter into license or other arrangements with other pharmaceutical companies under which those companies would conduct the required clinical trials and seek FDA approval for most or all of our proposed products. See “Risk Factors – *Risks related to our business* – 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” on page 20 for a discussion of certain risks related to the proposed strategic alliances that we are seeking.

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. We are not aware of any other companies developing drugs for the reversal of respiratory depression induced by opiates or other central nervous system agents. 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. See “Risk Factors – *Risks related to our industry* – 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” on page 21 for a discussion of certain risks related to product liability claims against us.

Employees

Following our recently announced reduction in our workforce, we currently have 13 full-time employees, including one M.D. and six 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. We sponsor a substantial amount of research in academic laboratories at the University of California, Irvine and the University of Alberta, Canada.

Item 1A. Risk Factors

In addition to the other matters set forth in this Annual Report on Form 10-K, our continuing operations and the price of our common stock are subject to the following risks:

Risks related to our business

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

In its audit opinion issued in connection with our balance sheets as of December 31, 2008 and 2007 and our statements of operations, stockholder's equity and cash flows for the years ended December 31, 2008, 2007 and 2006, our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern given our recurring net losses and negative cash flows from operations. The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts of liabilities that might be necessary should we be unable to continue in existence. While we have relied principally in the past on external financing to provide liquidity and capital resources for our operations, we can provide no assurance that cash generated from our operations together with cash received in the future from external financing will be sufficient to enable us to continue as a going concern.

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

Since our formation on February 10, 1987 through December 31, 2008, we have generated only modest operating revenues and we have incurred net losses approximating \$107,323,000. For the years ended December 31, 2008, 2007 and 2006, our net losses were approximately \$14,596,000, \$12,969,000, and \$16,055,000, respectively. As of December 31, 2008, we had an accumulated deficit of approximately \$109,355,000. 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.

If we are unable to progress in our clinical development of AMPAKINE CX717 for an acute indication in a timely manner, or at all, there could be a significant negative impact on our business operations and the market price of our common stock.

On October 10, 2007, the Division of Psychiatry Products of the FDA notified us that it rejected our IND to study AMPAKINE CX717 in ADHD. The denial was based upon results of animal toxicology

studies that we filed with the agency. At this time, we do not anticipate re-submitting further data to the FDA for CX717 in the ADHD indication.

Our objective is to continue our plans to develop CX717 for the acute treatment of respiratory depression and to continue our study of CX717 in our Alzheimer's disease PET scan study. We believe that the IND previously filed with the Division of Neurology Products of the FDA for the treatment of Alzheimer's disease will not be affected by the actions of the Division of Psychiatry Products. However, there can be no assurance that we will receive final FDA approval for any eventual New Drug Application submission.

We also believe that by developing an acute use for CX717, such as treatment of respiratory depression, the risks perceived to be associated with higher chronic doses required for ADHD may be mitigated. Additionally, the risk/benefit ratio for the treatment of patients with life-threatening respiratory depression is substantially different than for the treatment of ADHD. Also, our preclinical data for animal models of improvement of memory and cognition consistently shows that the dose level of CX717 required is 5-10 fold less than the dose required in animal models of ADHD. We believe that either lower dosage levels for chronic administration and/or acute uses are possible options for the continued development of CX717.

If we are unable to progress in our clinical development of AMPAKINE CX717 for an acute indication in a timely manner, or at all, there could be a significant negative impact on our business operations and the market price of our common stock.

We will need additional capital in the future and, if it is not available on terms acceptable to us, or 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 independently undertake 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 and the anticipated net proceeds from our registered direct private offering of convertible preferred stock and warrants to purchase shares of our common stock in April 2009, will be sufficient to meet our requirements late into the third quarter of calendar year 2009. 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 Organon and Servier, although there is no assurance that we will receive milestone payments from Organon or Servier within the desired timeframe, or at all. Additional funds also may result from the exercise of warrants to purchase shares of our common stock. As of April 10, 2009, warrants to purchase up to approximately 7.9 million shares of our common stock were outstanding at exercise prices ranging from \$1.65 to \$4.29 per share. If these remaining warrants are fully exercised, of which there can be no assurance, such exercise would provide approximately \$18,930,000 of additional capital.

Our cash requirements in the future may be significantly different from our current estimates and depend on many factors, including:

- the results of our clinical trials;
- the time and costs involved in obtaining regulatory approvals;
- the costs of setting up and operating our own marketing and sales organization;

- the ability to obtain funding under contractual and licensing agreements;
- the costs involved in obtaining and enforcing patents or any litigation by third parties regarding intellectual property; and
- our success in entering into collaborative relationships with other parties.

To finance our future activities, we may seek funds through additional rounds of financing, including private or public equity or debt offerings and collaborative arrangements with corporate partners. We cannot say with any certainty that we will be able to obtain the additional needed funds on reasonable terms, or at all. The sale of additional equity or convertible debt securities could result in additional dilution to our stockholders. If we issued preferred equity or debt securities, these securities could have rights superior to holders of our common stock, and 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 near term, 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 The Regents of the University of California and The Governors of the University of Alberta, 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. Under our agreement with The Governors of the University of Alberta, we have exclusive rights to the use of AMPAKINE compounds to prevent and treat respiratory depression induced by opiate analgesics, barbiturates and anesthetic and sedative agents.

Our rights to certain of the AMPAKINE compounds are secured by patents or patent applications owned wholly by the University of California or by the University of California as a co-owner with us. Our existing agreements with the University of California require the University of California 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 approximating \$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.

Our rights to the use of AMPAKINE compounds to prevent and treat respiratory depression induced by opiate analgesics, barbiturates and anesthetic and sedative agents include rights to a patent application owned wholly by The Governors of the University of Alberta. Our existing agreement with The University of Alberta requires us to file, prosecute and maintain patent applications related to our licensed rights in coordination with the University of Alberta. Such agreement also requires us to make certain minimum annual payments pursuant to the terms of a research agreement, meet certain milestones and diligently seek to commercialize the underlying technology. Although we currently are in compliance with our obligations under the agreements with each of The Regents of the University of California and The Governors of the University of Alberta, including minimum annual payments and diligence milestones, our failure to meet any of these requirements could allow the respective university to

terminate that particular agreement. Management believes that it maintains a strong relationship with each such university.

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 Organon and Servier, we are seeking other pharmaceutical company partners to develop other major indications for the AMPAKINE compounds. These agreements would potentially provide us with additional funds in exchange for exclusive or non-exclusive license or other rights to the technologies and products that we are currently developing. Competition between biopharmaceutical companies for these types of arrangements is intense. Although we have been engaged in discussions with candidate companies for some time, we cannot give any assurance that these discussions will result in an agreement or agreements in a timely manner, or 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. Dr. Lynch plays a key role in guiding our research. In addition, we sponsor 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. We maintain a positive relationship with Dr. Lynch and continue to fund research related to understanding the molecular actions of the AMPAKINE compounds and the AMPA receptor in his laboratory.

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.

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

We are highly dependent upon senior management and key technical personnel and currently do not carry any insurance policies on such persons. In particular, we are highly dependent on our Executive Chairman, Roger G. Stoll, Ph.D.; our President and Chief Executive Officer, Mark A. Varney, Ph.D.; and our Chief Medical Officer, Pierre V. Trân, M.D., M.M.M., all of whom have entered into employment agreements with us. Competition for qualified employees among pharmaceutical and biotechnology companies is intense. As previously announced, in early March 2009 we reduced our workforce in an effort to conserve our capital resources, which reduction included certain of our technical personnel. The loss of any of our senior management or additional loss of our technical personnel, 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.

Other risks

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

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, 2008, 2007 and 2006, as quoted on the NYSE Amex (formerly The American Stock Exchange), was \$0.41 to \$1.24, \$0.44 to \$3.47 and \$1.19 to \$5.94, 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.

There is a large number of shares of common stock that may be sold, which may depress the market price of our stock.

As of April 10, 2009, we had approximately 47.6 million shares of common stock outstanding. Additionally, if all warrants and options outstanding as of such date are exercised prior to their expiration, approximately 19.0 million additional shares of common stock could become freely tradable without restriction. Sales of substantial amounts of common stock in the public market 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 restated certificate of incorporation, as amended, could make it more difficult for a third party to acquire control of our business, even if such change in control would be beneficial to our stockholders. Our restated certificate of incorporation, as amended, allows our Board of Directors to issue up to 549,500 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.

We may be unable to maintain the standards for listing on the NYSE Amex, which could adversely affect the liquidity of our common stock.

Our common stock is currently listed on the NYSE Amex. There are several requirements that we must satisfy in order for our common stock to continue to be listed on the NYSE Amex. We may not comply with all of these listing requirements, which may result in the delisting of our common stock. Delisting from the NYSE Amex could adversely affect the liquidity and the price of our common stock and could have a long-term adverse impact on our ability to raise future capital through a sale of shares of our common stock. If our common stock were delisted it would be traded on an electronic bulletin board established for securities that are not traded on a national securities exchange or traded in quotations published by the Pink OTC Markets, Inc., commonly referred to as the “pink sheets.” If this occurs, it could be difficult to sell our securities or obtain the same level of market information as to the price of shares of our common stock as is currently available.

If our common stock were delisted and determined to be a “penny stock,” a broker-dealer may find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock in the secondary market.

In addition, if our common stock were delisted, it may be subject to the so-called “penny stock” rules. The SEC has adopted regulations that define a “penny stock” to be any equity security that has a market price per share of less than \$5.00, subject to certain exceptions, such as any securities listed on a national securities exchange. For any transaction involving a “penny stock,” unless exempt, the rules impose additional sales practice requirements on broker-dealers, subject to certain exceptions. If our common stock were delisted and determined to be a “penny stock,” a broker-dealer may find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock on the secondary market.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We lease approximately 32,000 square feet of office, research laboratory and expansion space in Irvine, California, under an operating lease that expires May 31, 2012. Current monthly rent on these facilities is approximately \$45,000. We believe that our current facilities will be adequate and suitable for our research and development activities for at least the remainder of the lease term.

Item 3. Legal Proceedings

We are not a party to any material legal proceedings, nor has any material proceeding been terminated during the fiscal year ended December 31, 2008.

Item 4. Submission of Matters to a Vote of Security Holders

None.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock trades 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, 2008 and 2007, as furnished by the NYSE Amex.

	<u>High</u>	<u>Low</u>
Fiscal Year ended December 31, 2008		
Fourth Quarter	\$ 0.96	\$ 0.41
Third Quarter	1.17	0.56
Second Quarter	1.24	0.56
First Quarter	1.13	0.48
Fiscal Year ended December 31, 2007		
Fourth Quarter	\$ 1.85	\$ 0.44
Third Quarter	3.47	1.63
Second Quarter	3.13	2.01
First Quarter	2.55	1.02

As of April 10, 2009, there were 455 stockholders of record of our common stock, and approximately 9,500 beneficial owners. The high and low sales prices for our common stock on April 9, 2009, as reported by the NYSE Amex, were \$0.40 and \$0.36, respectively.

We have never paid cash dividends on our common stock and do not anticipate paying such dividends in the foreseeable future. The payment of dividends, if any, will be determined by the Board of Directors in light of conditions then existing, including our financial condition and requirements, future prospects, restrictions in financing agreements, business conditions and other factors deemed relevant by the Board of Directors.

During the fiscal year ended December 31, 2008, we did not repurchase any of our securities.

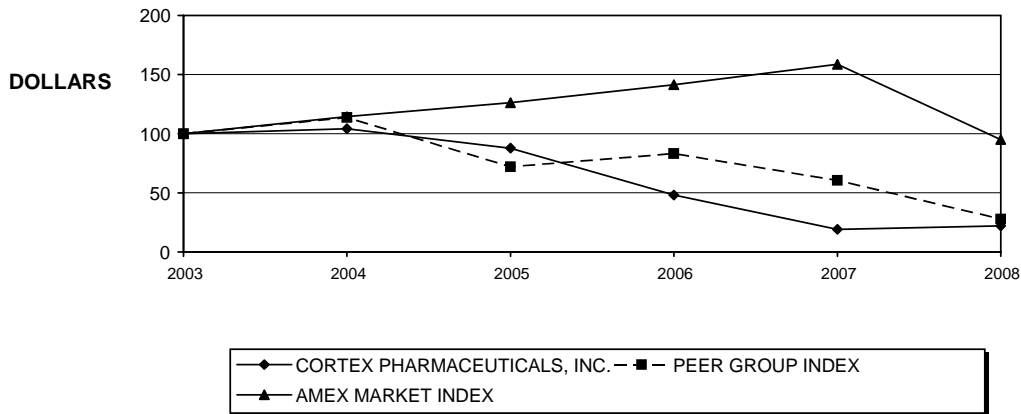
Stock Performance Graph

Set forth below is a line graph comparing the cumulative stockholder return on our common stock with the cumulative total return of The American Stock Exchange Composite Index and an industry peer group identified by us (the "Peer Group Index"). The Peer Group Index consists of TorreyPines Therapeutics, Indevus Pharmaceuticals, Inc., Spectrum Pharmaceuticals, Inc., Neurobiological Technologies, Inc., StemCells, Inc. and Titan Pharmaceuticals, Inc. The Peer Group Index return consists of the weighted returns of each component issuer according to such issuer's respective stock market capitalization at the beginning of each period for which a return is indicated.

The graph assumes an investment of \$100 in our common stock on January 1, 2004, and an investment in each of The American Stock Exchange Composite Index and the Peer Group Index of \$100 on January 1, 2004. The graph covers the period from January 1, 2004 to December 31, 2008.

The calculation of cumulative stockholder return for The American Stock Exchange Composite Index and the Peer Group Index includes the reinvestment of dividends. The calculation of cumulative stockholder return on our common stock does not include reinvestment of dividends because we did not pay dividends on our common stock during the measurement period. The performance shown is not necessarily an indicator of future price performance.

**COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN
AMONG CORTEX PHARMACEUTICALS, INC.,
AMEX MARKET INDEX AND PEER GROUP INDEX**



ASSUMES \$100 INVESTED ON JANUARY 1, 2004
ASSUMES DIVIDENDS REINVESTED
FISCAL YEAR ENDED DECEMBER 31, 2008

Item 6. Selected Financial Data

We have derived the selected financial data presented below from our audited financial statements and notes related thereto. The information set forth below is not necessarily indicative of the results of future operations. You should read the selected financial data together with the audited financial statements and related notes and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in this Annual Report on Form 10-K. As reported on our Current Report on Form 8-K dated November 10, 2004, we changed our fiscal year end from June 30 to December 31, implementing such change for the six months ended December 31, 2004.

(In thousands, except per share data)

	Year ended December 31, <u>2008</u>	Year ended December 31, <u>2007</u>	Year ended December 31, <u>2006</u>	Year ended December 31, <u>2005</u>	Six Months ended December 31, <u>2004</u>	Year ended June 30, <u>2004</u>
INCOME STATEMENT DATA						
Revenues:						
Research and license revenue	\$ —	\$ —	\$ 1,150	\$ 2,473	\$ 1,788	\$ 6,792
Grant revenue	<u>—</u>	<u>—</u>	<u>27</u>	<u>104</u>	<u>108</u>	<u>181</u>
Total revenues	<u>—</u>	<u>—</u>	<u>1,177</u>	<u>2,577</u>	<u>1,896</u>	<u>6,973</u>
Operating expenses:						
Research and development	10,780	9,327	13,262	11,361	5,010	6,305
General and administrative	<u>4,259</u>	<u>4,320</u>	<u>4,616</u>	<u>3,376</u>	<u>1,598</u>	<u>3,208</u>
Total costs and expenses	<u>15,039</u>	<u>13,647</u>	<u>17,878</u>	<u>14,737</u>	<u>6,608</u>	<u>9,513</u>
Loss from operations	(15,039)	(13,647)	(16,701)	(12,160)	(4,712)	(2,540)
Interest income, net	443	678	646	637	167	149
Change in fair value of common stock warrants	—	—	—	(83)	498	(3,603)
Net loss applicable to common stock	\$ (14,596)	\$ (12,969)	\$ (16,055)	\$ (11,606)	\$ (4,046)	\$ (5,994)
Basic and diluted net loss per share	\$ (0.31)	\$ (0.31)	\$ (0.47)	\$ (0.36)	\$ (0.14)	\$ (0.26)
Shares used in basic and diluted calculation	47,572	42,133	34,349	32,665	28,355	23,182
Non-cash stock compensation charges included in operating expenses:						
Research and development	\$ 722	\$ 1,371	\$ 1,997	\$ 183	\$ 84	\$ 189
General and administrative	<u>577</u>	<u>866</u>	<u>1,234</u>	<u>(15)</u>	<u>68</u>	<u>917</u>
	\$ 1,299	\$ 2,237	\$ 3,231	\$ 168	\$ 152	\$ 1,106
BALANCE SHEET DATA						
Cash and equivalents	\$ 1,431	\$ 4,021	\$ 1,649	\$ 2,063	\$ 9,157	\$ 9,977
Marketable securities	2,710	13,264	7,799	15,198	18,839	12,211
Working capital	2,541	15,805	7,917	14,710	26,070	20,567
Total assets	5,152	18,429	10,435	17,989	29,912	22,891
Unearned revenue, net of current portion, and other long-term liability	—	25	58	50	23	381
Common stock warrants	—	—	—	—	3,958	—
Total stockholders’ equity	3,397	16,677	8,320	15,132	23,647	20,489

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read in conjunction with the audited financial statements and notes related thereto appearing elsewhere herein.

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 their 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 U.S. 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

In accordance with the SEC’s Staff Accounting Bulletin No. 104 (“SAB 104”), amounts received for upfront technology license fees under multiple-element arrangements are deferred and recognized over the period of committed services or performance, if such arrangements require our on-going services or performance. We record grant revenues as we incur expenses related to the grant projects. All amounts received under collaborative research agreements or research grants are nonrefundable, regardless of the success of the underlying research.

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

In November 2002, the Emerging Issues Task Force (“EITF”) of the Financial Accounting Standards Board (“FASB”) reached consensus on Issue 00-21. EITF Issue 00-21 addresses the accounting for arrangements that may involve the delivery or performance of multiple products, services and/or rights to use assets. Specifically, Issue 00-21 requires the recognition of revenue from milestone payments over the remaining minimum period of performance obligations. As required, we apply the principles of Issue 00-21 to multiple element agreements that we enter into or modify after July 1, 2003.

Employee Stock Options and Stock-Based Compensation

As required, as of January 1, 2006 we adopted Statement of Financial Accounting Standards No. 123(R) (“SFAS 123(R)”), which requires all share-based payments to employees, including grants of employee stock options, to be recognized in the financial statements based on their fair values.

In accordance with SFAS 123, “Accounting for Stock-Based Compensation,” and EITF Issue 96-18, “Accounting for Equity Instruments that are Issued to Other than Employees for Acquiring, or in Conjunction with Selling Goods and Services,” stock options and warrants issued to 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.

Registration Payment Arrangements

In connection with prior private placements of our common stock and warrants to purchase shares of our common stock, we entered into agreements that committed us to timely register the shares underlying the issued warrants. Those registration agreements specified potential cash penalties if we did not timely register the related shares with the SEC.

In accordance with EITF 00-19, "Accounting for Derivative Financial Instruments Indexed To, and Potentially Settled In a Company's Own Stock," when the potential cash penalties were included in registration payment arrangements, we recorded the estimated fair value of the warrants as a liability, with an offsetting reduction to additional paid-in capital received from the private placement. The fair value of the warrants was estimated using the Black-Scholes option pricing model.

The estimated fair value of the warrants was re-measured at each reporting date and on the date of effectiveness of the related registration statement, with the increase in fair value recorded as other expense in our Statement of Operations. As of the effectiveness of the registration statement, the warrant liability was reclassified to additional paid-in capital, evidencing the non-impact of these adjustments on our financial position and business operations.

In December 2006, the FASB issued FASB Staff Position ("FSP") EITF No. 00-19-2, "Accounting for Registration Payment Arrangements." This FSP specifies that companies that enter into agreements to register securities will be required to recognize a liability if a payment to investors for failing to fulfill the agreement is probable and can be reasonably estimated. This accounting differs from the guidance in EITF 00-19, which required a liability to be recognized and measured at fair value, regardless of probability.

EITF 00-19-2 is effective immediately for registration payment arrangements and the financial instruments subject to those arrangements that we enter into or modify after the date of issuance of this FSP. For our registration payment arrangements and financial instruments subject to those arrangements that were entered prior to the issuance of this FSP, the guidance was effective beginning January 1, 2007.

Transition to EITF 00-19-2 was to be achieved by reporting a change in accounting principle through a cumulative-effect adjustment to the opening balance of retained earnings. For purposes of measuring the cumulative-effect adjustment related to the recognition of a contingent liability, we evaluated whether the transfer of consideration under our registration payment arrangements was probable and could be reasonably estimated as of the January 1, 2007 adoption date. Given that we did not deem the transfer of consideration under our existing registration payment arrangements as probable as of December 31, 2006, we did not record a cumulative-effect adjustment in connection with the adoption of this FSP.

In connection with the obligation to maintain effectiveness of the registration statements filed with its prior transactions, the Company has estimated the maximum potential amount of undiscounted payments that it could be required to make under the registration arrangements as approximately \$1,814,000. Given that the Company did not deem the transfer of consideration under its existing registration payment arrangements as probable as of December 31, 2007 or 2008, no related expense or liability has been recorded during the years ended December 31, 2007 or 2008.

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 U.S., with no need for management's judgment in their application. There are also areas in which management's judgment in selecting any available alternative would not produce a materially different result. See our audited financial statements and notes thereto which begin

on page F-1 of this Annual Report on Form 10-K, which contain accounting policies and other disclosures required by accounting principles generally accepted in the U.S.

Going Concern

Our independent registered public accounting firm has expressed substantial doubt as to our ability to continue as a going concern, in its report for the fiscal year ended December 31, 2008, based on significant operating losses that we incurred and the fact that we do not have adequate working capital to finance our day-to-day operations. Our continued existence depends upon the success of our efforts to raise additional capital necessary to meet our obligations as they become due and to obtain sufficient capital to execute our business plan. We intend to obtain capital primarily through issuances of debt or equity or entering into collaborative arrangements with corporate partners. There can be no assurance that we will be successful in completing additional financing or collaboration transactions. If we cannot obtain adequate funding, we may be required to significantly curtail or even shut down our operations.

Results of Operations

General

In January 1999, we entered into a research collaboration and exclusive worldwide license agreement with NV Organon (“Organon”). The agreement will allow Organon to develop and commercialize our proprietary AMPAKINE technology for the treatment of schizophrenia and depression. In connection with the agreement, we received a \$2,000,000 up-front licensing payment and research support payments of approximately \$3,000,000 per year for two years.

The agreement with Organon also includes milestone payments based upon clinical development, plus royalty payments on worldwide sales. Through December 31, 2007, we have received milestone payments totaling \$6,000,000 under the agreement with Organon.

In October 2000, we entered into a research collaboration agreement and an exclusive license agreement with Les Laboratoires Servier (“Servier”). The license agreement will allow Servier to develop and commercialize select AMPAKINE[®] compounds for the treatment of (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. In early December 2006, we terminated the research collaboration with Servier and as a result the worldwide rights for the AMPAKINE technology for treatment of neurodegenerative diseases were returned to us, other than three compounds selected by Servier for commercialization.

The agreements with Servier, as amended to date, include a nonrefundable up-front fee of \$5,000,000 and research support payments of \$2,025,000 per year through early December 2006 (subject to us providing agreed-upon levels of research personnel). The amount of research support was subject to annual adjustment based upon the increase in the U.S. Department of Labor’s Consumer Price Index. The agreements also include potential milestone payments, plus royalty payments on sales in licensed territories.

In October 2002, Servier agreed to provide us with \$4,000,000 of additional research support, in exchange for rights to our AMPAKINE compounds for the potential treatment of anxiety disorders in Servier’s licensed territories. The \$4,000,000 was paid in quarterly installments of \$500,000 over a two-year period, ending in September 2004.

From inception (February 10, 1987) through December 31, 2008, we sustained losses approximating \$107,323,000. Due to projected fluctuations in funding, continuing losses are likely over the next several years, as our ongoing operating expenses will only be offset, if at all, by possible

milestone payments from our agreements with Servier and Organon, or under planned strategic alliances that we are seeking with other pharmaceutical companies for the clinical development, manufacturing and marketing of our products. The nature and timing of payments to us under the Servier and Organon 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 require successful commercial development of our products by Servier, Organon, or our other prospective partners to attain sustained profitable operations from royalties or other product-based revenues.

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

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.

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.

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.

Years ended December 31, 2007 and 2006

For the fiscal year ended December 31, 2007, our net loss decreased by 19% to approximately \$12,969,000 compared to a net loss of approximately \$16,055,000 for the prior year.

Revenues for the fiscal year ended December 31, 2007 decreased to \$0 from approximately \$1,177,000 reported in the prior year due primarily to decreased research revenues from our collaboration agreement with Servier. As reported earlier, we terminated the research phase of our collaboration with Servier in early December 2006.

Our research and development expenses for the year ended December 31, 2007 decreased from approximately \$13,262,000 to approximately \$9,327,000, or by 30%, from the prior year. The decrease in our non-cash stock compensation charges represents approximately \$626,000, or 16%, of this decrease.

Most of the remaining decreased expenses reflect prior year clinical expenses incurred before the FDA clinical hold on CX717, and preclinical expenses to address the clinical hold.

As reported earlier, the FDA placed a clinical hold on CX717 in late March 2006 due to concerns over some preclinical animal data and not as a result of data from any human clinical trials. After we provided additional toxicological data, the FDA released the clinical hold in October 2006, but imposed a limited dose range for further clinical testing of the compound.

Our general and administrative expenses for the year ended December 31, 2007 decreased from approximately \$4,616,000 to approximately \$4,320,000, or by 6%, compared to the prior year, with non-cash stock compensation charges producing the decrease. Total non-cash stock compensation charges for the current year decreased by approximately \$368,000 from the prior year.

Net interest income of approximately \$678,000 in fiscal year 2007 was consistent with net interest income of approximately \$646,000 for the prior year.

Liquidity and Capital Resources

Under the agreements signed with Servier in October 2000, as amended to date, the collaborative research phase of the agreement ended in early December 2006. As a result of this termination we regained the worldwide rights for the use of AMPAKINE compounds for treatment of (a) age related decline in memory and cognition, (b) mild cognitive impairment and Alzheimer's disease (c) neurodegenerative diseases, (d) sexual dysfunction and (e) anxiety. Servier subsequently selected three AMPAKINE compounds that it may develop for potential commercialization. We remain eligible to receive payments based upon defined clinical development milestones of the licensed compounds and royalties on sales in licensed territories. Under the terms of the agreement with Organon, we may receive additional milestone payments based on clinical development of the licensed technology and ultimately, royalties on worldwide sales.

In January 2004, we completed a private placement of an aggregate of 6,909,091 shares of our common stock at \$2.75 per share and five-year warrants to purchase up to an additional aggregate of 4,490,910 shares at an exercise price of \$3.25 per share. We received approximately \$17,500,000 in net proceeds from the private placement. The warrants are subject to a call right in our favor to the extent that the closing price of our common stock exceeds \$7.50 per share for any 13 consecutive trading day period. As of December 31, 2008, related warrants to purchase up to 3,969,137 shares of common stock remained outstanding. In January 2009, these warrants expired unexercised.

In December 2004, we completed a private placement of an aggregate of 4,233,333 shares of our common stock at \$2.66 per share and five-year warrants to purchase up to an additional aggregate of 2,116,666 shares at an exercise price of \$3.00 per share. We received approximately \$10,385,000 in net proceeds from the private placement. The warrants are subject to a call right in our favor to the extent that the closing price of our common stock exceeds \$7.50 per share for any 13 consecutive trading day period. During the year ended December 31, 2006, we received approximately \$1,023,000 from the exercise of related warrants. There was no exercise of related warrants during the year ended December 31, 2007 or 2008. If the remaining warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$5,327,000 of additional capital.

In January 2007, we completed a registered direct offering of an aggregate of 5,021,427 shares of our common stock at \$1.12 per share and five-year warrants to purchase up to an additional aggregate of 3,263,927 shares at an exercise price of \$1.66 per share. We received approximately \$5,080,000 in net proceeds from the offering. The warrants are subject to a call right in our favor to the extent that the closing price of our common stock exceeds \$3.35 for any 13 consecutive trading day period. During the year ended December 31, 2007, we received approximately \$443,000 from the exercise of related

warrants. There was no exercise of related warrants during the year ended December 31, 2008. If the remaining warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$4,975,000 of additional capital.

In August 2007, we completed a registered direct offering of an aggregate of 7,075,000 shares of our common stock at \$2.00 per share and five-year warrants to purchase up to an additional aggregate of 2,830,000 shares at an exercise price of \$2.64 per share. We received approximately \$13,135,000 in net proceeds from the offering. There was no exercise of related warrants during the year ended December 31, 2007 or 2008. If the related warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$8,172,000 of additional capital.

In April 2009, we obtained a commitment for a registered direct offering of preferred stock that is convertible into an aggregate of 8,676,471 shares of our common stock at a conversion price of \$0.17 per share. In connection with the anticipated transaction, we expect to issue warrants to purchase up to an additional aggregate of 6,941,176 common shares with an exercise price of \$0.3401 per share. We also expect to issue warrants to purchase up to 433,824 shares of our common stock to the placement agent for the transaction. The warrants to be issued to the placement agent will have an exercise price of \$0.26 per share and all of the warrants will be exercisable after six months from the date of issuance and will have a three-year term thereafter. We anticipate receiving approximately \$1,250,000 in net proceeds from the offering. If the related warrants expected to be issued are fully exercised, of which there can be no assurance, the warrants would provide approximately \$2,475,000 of additional capital.

Cash Position

As of December 31, 2008, we had cash, cash equivalents and marketable securities totaling approximately \$4,141,000 and working capital of approximately \$2,541,000. As of December 31, 2007, we had cash, cash equivalents and marketable securities totaling approximately \$17,284,000 and working capital of approximately \$15,805,000. The decreases in cash and working capital reflect amounts required to fund operations.

With the net proceeds from our anticipated registered direct offering of convertible preferred stock in April 2009, as discussed more fully above, we believe that we have adequate financial resources to conduct our operations late into the third quarter of 2009. This raises substantial doubt about our ability to continue as a going concern, which will be dependent on our ability to obtain additional financing and generate sufficient cash flows to meet our obligations on a timely basis.

We incurred net losses of approximately \$14,596,000 during the year ended December 31, 2008. Our ongoing cash requirements will depend on numerous factors, particularly the progress of clinical trials of our AMPAKINE 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 transaction with another pharmaceutical company.

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, the illiquid nature of our stock 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.

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.

For the year ended December 31, 2008, net cash used in operating activities was approximately \$13,046,000, and included our net loss for the period of approximately \$14,596,000, adjusted for non-cash stock compensation charges of approximately \$1,299,000, depreciation charges aggregating approximately \$165,000, and changes in operating assets and liabilities. Net cash used in operating activities was approximately \$10,742,000 during the year ended December 31, 2007, and included our net loss for the period of approximately \$12,969,000, adjusted for non-cash stock compensation charges of approximately \$2,237,000, depreciation charges aggregating approximately \$127,000, and changes in operating assets and liabilities.

Net cash provided by investing activities was approximately \$10,448,000 for the year ended December 31, 2008, and resulted from the maturity and sale of marketable securities of approximately \$13,757,000, partially offset by the purchases of short-term investments and fixed assets of approximately \$3,186,000 and \$124,000, respectively. For the year ended December 31, 2007, net cash used in investing activities approximated \$5,944,000, and primarily resulted from the purchases of marketable securities and fixed assets of approximately \$17,060,000 and \$550,000, respectively, partially offset by the maturity and sale of marketable securities of \$11,666,000.

For the year ended December 31, 2008, net cash provided by financing activities totaled approximately \$9,000, reflecting proceeds from the exercise of options to purchase common stock. Net cash provided by financing activities approximated \$19,058,000 for the year ended December 31, 2007, and primarily represented proceeds from the Company's registered direct offerings of its common stock and warrants to purchase shares of its common stock in January and August 2007.

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 years ending December 31, 2009, 2010, 2011 and the five months ending May 31, 2012 are approximately \$552,000, \$556,000, \$581,000 and \$238,000, respectively. From inception (February 10, 1987) through December 31, 2008, expenditures for furniture, equipment and leasehold improvements aggregated approximately \$3,833,000.

We are committed to approximately \$306,000 for sponsored research to academic and other external institutions, all of which is payable within the next twelve months. Commitments for preclinical and clinical development expenses approximate \$2,028,000, nearly all of which is payable within the next twelve months.

In June 2000, we received \$247,300 from the Institute for the Study of Aging (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 MCI that we conducted with our partner, Servier. Provided that we comply with the conditions of the funding agreement, including the restricted use of the amounts received,

repayment of the advance will not be required 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.

The following table sets forth our contractual obligations as of December 31, 2008:

Contractual Obligations	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
Operating Lease Obligations	\$ 1,927,000	\$ 552,000	\$ 1,137,000	\$ 238,000	\$ —
Other Contractual Obligations	<u>2,636,000</u>	<u>2,033,000</u>	<u>178,000</u>	<u>170,000</u>	<u>255,000</u>
Total	<u>\$ 4,563,000</u>	<u>\$ 2,585,000</u>	<u>\$ 1,315,000</u>	<u>\$ 408,000</u>	<u>\$ 255,000</u>

Staffing

As of December 31, 2008, we had 27 full-time employees. Following our recently announced reduction in our workforce, we had 13 full-time employees. We do not anticipate significant increases in the number of our full-time employees within the coming year.

Plant and Equipment

We expect that we will require modest investments in plant and equipment within the coming year.

Off-Balance Sheet Arrangements

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

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to certain market risks associated with interest rate fluctuations on our marketable securities and borrowing arrangement. All investments in marketable securities are entered into for purposes other than trading. We are not subject to risks from currency rate fluctuations as we do not typically conduct transactions in foreign currencies. In addition, we do not utilize hedging contracts or similar instruments.

Our exposure to interest rate risk arises from financial instruments entered into in the normal course of business. Certain of our financial instruments are fixed rate, short-term investments in government and corporate notes and bonds, which are available for sale (and have been marked to market in the accompanying financial statements). Changes in interest rates generally affect the fair value of the

investments, however, because these financial instruments are considered “available for sale,” all such changes are reflected in the financial statements in the period affected. We manage interest rate risk on our investment portfolio by matching scheduled investment maturities with our cash requirements. As of December 31, 2008, our investment portfolio had a carrying amount of approximately \$2,710,000. If market interest rates were to increase immediately and uniformly by 10% from levels as of December 31, 2008, the resulting decline in the fair value of fixed rate bonds held within our portfolio would not be material to our financial position, results of operations and cash flows.

Our borrowing consists solely of our advance from the Institute, which is subject to potential repayment in the event that we enter an AMPAKINE compound into Phase III clinical testing as a potential treatment for Alzheimer’s disease. Potential repayment would include interest accruing at a discount to the prime lending rate. Changes in interest rates generally affect the fair value of such debt, but, based upon historical activity, such changes are not expected to have a material impact on earnings or cash flows. As of December 31, 2008, the principal and accrued interest of the advance amounted to approximately \$312,000.

Item 8. Financial Statements and Supplementary Data

Our financial statements and other information required by this item are set forth herein in a separate section beginning with the Index to Financial Statements on page F-1.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A(T). Controls and Procedures

We maintain disclosure controls and procedures (as defined in Rules 13a-15(e) and 15(d)-15(e) under the Exchange Act that are designed to ensure that information required to be disclosed in our reports under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

We carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our “disclosure controls and procedures” as of the end of the period covered by report, pursuant to Rules 13a-15(b) and 15d-15(b) under the Exchange Act. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures, as of the end of the period covered by this report, were effective in timely alerting them to material information relating to the Company required to be included in our periodic SEC filings.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f) or 15d-15(f). Management conducted an assessment of the effectiveness, as of December 31, 2008, of our internal control over financial reporting, based on the framework established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Based on our assessment under that framework, management concluded that our internal control over financial reporting was effective as of December 31, 2008.

This Annual Report on Form 10-K does not include an attestation report of our registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by our registered public accounting firm pursuant to temporary rules of the Securities and Exchange Commission that permit us to provide only management's report in this Annual Report on Form 10-K.

There has been no change in our internal control over financial reporting during the most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

/s/ Mark A. Varney, Ph.D.

Mark A. Varney, Ph.D.
(Chief Executive Officer)

/s/ Maria S. Messinger

Maria S. Messinger
(Chief Financial Officer)

April 13, 2009

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Nominees for Director

The names of the nominees for director and certain biographical information about them are set forth below:

<u>Name</u>	<u>Age</u>	<u>Director Since</u>	<u>Principal Occupation</u>
Robert F. Allnutt ⁽¹⁾⁽³⁾	73	1995	Senior Counselor, APCO Worldwide, Inc.
John F. Benedik ⁽²⁾⁽³⁾	61	2005	Retired Senior Partner, Arthur Andersen LLP
Charles J. Casamento ⁽¹⁾⁽²⁾	63	1997	Principal and Executive Officer, The Sage Group, Inc.
Carl W. Cotman, Ph.D. ⁽⁴⁾	69	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. ⁽²⁾⁽³⁾	55	2003	Managing General Partner, Mayflower Partners
M. Ross Johnson, Ph.D. ⁽¹⁾⁽⁴⁾	64	2002	President and Chief Executive Officer, Parion Sciences, Inc.
Roger G. Stoll, Ph.D.	66	2002	Executive Chairman of the Company
Mark A. Varney, Ph.D. ⁽⁴⁾	42	2007	President and Chief Executive Officer of the Company

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

Robert F. Allnutt has been a director since December 1995 and served as Chairman of the Board from February 1999 until the appointment of Roger G. Stoll, Ph.D. in August 2002. Since February 1995, Mr. Allnutt has been a senior counselor for APCO Worldwide, Inc., a public affairs and strategic communications company. Mr. Allnutt was Executive Vice President of the Pharmaceutical Manufacturers Association 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 25 years, including 15 years at NASA, where his positions included Associate Deputy Administrator, the third ranking position in the agency headquarters. Mr. Allnutt currently serves as member of the board of directors and Vice Chair 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.

John F. Benedik was appointed to the Board of Directors of the Company in December 2005. From 1970 to May 2003, Mr. Benedik served with Arthur Andersen LLP, being 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. He currently serves as a board member and treasurer of the American Conference on Diversity. Mr. Benedik, a 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.

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 Officer 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 also currently serves of the board of directors and as Chairman of the Audit Committee of Supergen, Inc., a publicly held pharmaceutical company. He holds a B.S. in Pharmacy from Fordham University and an M.B.A. from Iona College.

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, served as a director of the Company from March 1989 to October 1990, and was reelected as a director in 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 chaired the Scientific Advisory Council of the Alzheimer's Association and is 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 such as the Journal of Alzheimer's Disease and Other Dementias and has authored or co-authored nine books and over 670 articles in the fields of neurobiology, memory and cognition, and the basic mechanisms causing brain dysfunction in aging and the development of Alzheimer's disease. 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.

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 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, and The Alliance For Aging Research, a non-profit organization dedicated to supporting and accelerating medical discoveries to improve the experience of aging and health. He also serves on the board of directors

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

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 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., the University of North Carolina Education Advancement Board and Kainos Medicine, Inc. 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. His extensive contributions to drug discovery and development and basic science have resulted in over 300 scientific publications, patents and invited presentations, which include 119 issued patents. 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.

Roger G. Stoll, Ph.D. has served as a director of the Company since April 2002 and became Chairman, President and Chief Executive Officer of the Company in August 2002. In August 2008, Dr. Stoll became Executive Chairman of the Company and Mark A. Varney, Ph.D. became President and Chief Executive Officer. 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.

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 named President and Chief Executive Officer in August 2008. Prior to joining the Company, from June 2004 to January 2006, Dr. Varney held a senior level position at Sepracor, Inc., a publicly held pharmaceutical company where he was Vice President

and Head of Discovery. 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. Prior to that, 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.

Executive Officers

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

<u>Name</u>	<u>Age</u>	<u>Position with Company</u>
Roger G. Stoll, Ph.D.	66	Executive Chairman
Mark A. Varney, Ph.D.	42	President and Chief Executive Officer
Pierre V. Trân, M.D., M.M.M.	49	Chief Medical Officer and Vice President, Clinical Development
Maria S. Messinger	41	Vice President, Chief Financial Officer and Corporate Secretary
James H. Coleman	67	Senior Vice President, Business Development
Steven A. Johnson	57	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.

Pierre V. Trân, M.D., M.M.M. was appointed Chief Medical Officer and Vice President, Clinical Development in October 2007. Prior to joining the Company, from September 2004 to October 2007, he was the senior vice president and chief medical officer of XenoPort, Inc. From 2002 to July 2004, Dr. Trân was global medical director, Joint Antidepressant Group, of Eli Lilly and Company. From 1992 to 2002, Dr. Trân was a physician in clinical research within the Neuroscience Group of Eli Lilly and Company. Dr. Trân received an M.D. from the Université de Franche-Comté (Besançon) in France and a Masters in Medical Management from Tulane University. He completed his residency training at Duke University and earned board certification in general adult psychiatry. Dr. Trân holds an academic appointment as Assistant Consulting Professor in the Department of Psychiatry of Duke University. Along with contributing to several books, he has extensive publications in peer-reviewed journals and has been a reviewer for the Journal of Clinical Psychiatry, the Journal of Clinical Psychopharmacology, Progress in Neuropsychopharmacology & Biological Psychiatry, and the Journal of Psychiatric Research. Dr. Trân is a member of the American Psychiatric Association and the Society of Biological Psychiatry.

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 is 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. (“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.

Other Key Employees

Steven A. Johnson, Ph.D., 57, was appointed Vice President of Preclinical Development in January 2004 and appointed as an executive officer of the Company in January 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 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.

Scientific Consultants

In addition to Dr. Cotman, whose biographical summary has been presented earlier, the other key scientific consultant to the Company is Gary S. Lynch, Ph.D. Gary D. Tollefson served as a consultant from April 2004 through March 2009. Arvid M. Carlsson, M.D., Ph.D. serves as a consultant to the Board of Directors.

Gary S. Lynch, Ph.D., 65, 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.

Gary D. Tollefson, M.D., Ph.D. served as a director and consultant of the Company from April 2004 until his death in March 2009. From May 2005 to early December 2008, Dr. Tollefson served as Chief Executive Officer of Orexigen Therapeutics, a publicly held biotechnology company. He was also a Clinical Professor of Psychiatry at the Indiana University School of Medicine, a position that he held since April 2004, and a consultant in pharmaceutical product development and strategy for Consilium, Inc. Prior to March 2004, Dr. Tollefson was employed as a senior executive at Eli Lilly & Company for nearly 14 years. As an employee of Eli Lilly & Company, Dr. Tollefson played a key strategic role in the development of the psychopharmacologic drugs Prozac®, Zyprexa®, Straterra®, Symbyax™ and Cymbalta®. Dr. Tollefson’s other career highlights include having served as Distinguished Lilly Research Scholar and Vice President Medical-Neuroscience; President, Neuroscience Products and Vice President, Lilly Research Laboratories. Prior to joining Lilly, he was Chairman of the Department of Psychiatry, St. Ramsey Medical Center, a University of Minnesota Teaching Affiliate Hospital. Dr. Tollefson received his B.A. (Psychology), M.D. and Ph.D. (Psychopharmacology) from the University of Minnesota. Dr. Tollefson conducted his internship

at St. Paul-Ramsey Medical Hospital and residency in Psychiatry at the University of Minnesota Hospitals in Minneapolis. Dr. Tollefson was certified by the American Board of Neurology and Psychiatry and the National Board of Medical Examiners. He served on the board of directors of Xenoport, Inc., a publicly held company focused on developing candidates that utilize the body's natural nutrient transport mechanisms to improve the therapeutic benefits of existing drugs. He was a member of several medical societies including a Fellow in the American College of Neuropharmacology, the American Society of Clinical Psychopharmacology, American Psychiatric Association, Society for Biological Psychiatry, American Academy of Clinical Psychiatrists and the International Psychogeriatric Association. Dr. Tollefson served as a journal reviewer for several medical and psychiatric journals. Dr. Tollefson authored or co-authored over 200 peer-reviewed scientific publications, was an international speaker in medical education and was awarded 22 method of treatment patents.

Arvid Carlsson, M.D., Ph.D., 86, 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.

Board Committees — Audit Committee

The Audit Committee meets with the Company's independent registered public accountants and management to prepare for and to review the results of the annual audit and to discuss the annual and quarterly financial statements, earnings releases and related matters. The Audit Committee, among other things, (i) selects and retains the independent registered public accountants, (ii) reviews with the independent registered public accountants the scope and anticipated cost of their audit, and their independence and performance, (iii) reviews accounting practices, financial structure and financial reporting, (iv) receives and considers the registered public accountants' comments as to controls, adequacy of staff and management performance and procedures in connection with audit and financial controls, (v) reviews and pre-approves all audit and non-audit services provided to the Company by the independent registered public accountants, and (vi) reviews and pre-approves all related-party transactions. The Audit Committee does not itself prepare financial statements or perform audits, and its members are not auditors or certifiers of the Company's financial statements.

During the fiscal year ended December 31, 2008, the Audit Committee consisted of Mr. Benedik as Chairman of the Committee, Dr. Drake and Mr. Casamento. None of Mr. Benedik, Dr. Drake, or Mr. Casamento is or has been an officer or employee of the Company and in all other respects meets the qualifications of an "independent" director under Section 121A of the AMEX Company Guide and as that term is used in Rule 10A-3 promulgated under the Securities Exchange Act of 1934, as amended. The Audit Committee held four (4) meetings with the independent registered public accountants during the fiscal year ended December 31, 2008 to discuss the annual audit of the financial statements for the fiscal year ended December 31, 2007, and the review of the financial statements for the quarters ended March 31, 2008, June 30, 2008 and September 30, 2008. The Audit Committee operates under a written charter adopted by the Board of Directors, a copy of which is available on the Company's website at www.cortexpharm.com. The Company's Board of Directors has determined that Mr. Benedik, Chairman of the Audit Committee, qualifies as an "audit committee financial expert" under rules promulgated by the Securities and Exchange Commission.

Compliance with Section 16(a) of the Securities Exchange Act of 1934

Section 16(a) of the Securities Exchange Act of 1934 requires the Company's directors and executive officers and persons who own more than ten percent of a registered class of the Company's equity securities to file with the Securities and Exchange Commission (the "SEC") initial reports of ownership and reports of changes in ownership of Common Stock and other equity securities of the Company. Officers, directors and ten-percent stockholders are required by SEC regulations to furnish the Company with copies of all Section 16(a) forms they file. To the Company's knowledge, based solely on the review of copies of such reports furnished to the Company and written representations that no other reports were required, during the fiscal year ended December 31, 2008, all of the Company's officers, directors and ten-percent stockholders complied with all applicable Section 16(a) filing requirements.

Code of Ethics

We have adopted a Code of Business Conduct and Ethics, which covers all of our directors and employees, including our principal executive and financial officers. Any amendment or waiver to our Code of Business Conduct and Ethics that applies to our directors or executive officers will be posted on our website at www.cortexpharm.com or in a report filed with the SEC on Form 8-K. A copy of our Code of Business Conduct and Ethics is available free of charge upon written request to our Corporate Secretary at 15241 Barranca Parkway, Irvine, California 92618.

Item 11. Executive Compensation

Compensation Discussion and Analysis

Overview of Compensation Program. The individuals who served as the Company's Chief Executive Officer and Chief Financial Officer during the year ended December 31, 2008, as well as the other individuals included in the Summary Compensation Table on page 48, are referred to as the "named executive officers."

The Compensation Committee of the Board has responsibility for establishing, implementing and monitoring adherence with the Company's compensation philosophy. The Compensation Committee ensures that the total compensation paid to the named executive officers is fair, reasonable and competitive.

Compensation Philosophy and Objectives. The Compensation Committee believes that the most effective executive compensation program is one that is designed to reward the achievement of specific annual, long-term and strategic goals by the Company, and which aligns executives' interests with those of the stockholders by rewarding performance above established goals, with the ultimate objective of improving stockholder value. The Compensation Committee evaluates both performance and compensation to ensure that the Company maintains its ability to attract and retain superior employees in key positions and that compensation provided to key employees remains competitive relative to the compensation paid to similarly situated executives of its peer companies. To that end, the Compensation Committee believes executive compensation packages provided by the Company to its executives, including the named executive officers, should include both cash and stock-based compensation that reward performance as measured against established goals.

Role of Executive Officers in Compensation Decisions. The Compensation Committee makes all compensation decisions for the named executive officers and approves recommendations regarding non-equity and equity awards to all elected officers of the Company. The Chief Executive Officer annually reviews the performance of each member of the named executive officers (other than the Chief Executive Officer, whose performance is reviewed by the Compensation Committee). The conclusions reached and recommendations based on these reviews, including with respect to salary adjustments and annual award

amounts, are presented to the Compensation Committee, who can exercise its discretion in modifying any recommended adjustments or awards to executives.

Setting Executive Compensation. Based on the foregoing objectives, the Compensation Committee has structured the Company's annual and long-term incentive-based cash and non-cash executive compensation to motivate executives to achieve the business goals set by the Company and reward the executives for achieving such goals. In furtherance of this, the Compensation Committee utilizes the Radford Biotechnology Executive Survey Report and the BioWorld Today Executive Survey Report in connection with its annual review of its total compensation program for the Chief Executive Officer as well as for the other named executive officers. The Compensation Committee also may utilize outside consultants on an as needed basis.

On an annual basis, the Compensation Committee reviews the objectives for each named executive officer, as compiled individually by each named executive officer with the Chief Executive Officer. The recommendations of the Compensation Committee are included in the finalized performance objectives for each named executive officer for the coming year. At the end of the year, the Compensation Committee reviews the performance of each named executive officer in achieving the established objectives. These results are included with the overall performance review provided by the Chief Executive Officer, after which the Compensation Committee votes upon any recommendations for salary adjustments, stock option grants and cash incentives. The Chief Executive Officer then executes the actions recommended by the Compensation Committee with respect to such matters.

A significant percentage of total compensation is allocated to incentives as a result of the philosophy mentioned above. There is no pre-established policy or target for the allocation between either cash and non-cash or short-term and long-term incentive compensation. Rather, the Compensation Committee reviews information provided by the mentioned salary surveys to determine the appropriate level and mix of incentive compensation. Income from such incentive compensation is realized as a result of the performance of the Company or the individual, depending on the type of award, compared to established goals.

2008 Executive Compensation Components

For the fiscal year ended December 31, 2008, the principal components of compensation for named executive officers were: (i) base salary; (ii) variable performance awards payable in cash, stock or stock options and tied to the achievement of certain goals; (iii) long-term stock-based incentive awards that strengthen the mutuality of interests between the named executive officers and the Company's stockholders; and (iv) perquisites and other personal benefits.

Base Salary

The Company provides named executive officers and other employees with base salary to compensate them for services rendered during the fiscal year. The base salary levels for the named executive officers were recommended by the Compensation Committee and established by the Board of Directors for the fiscal year ended December 31, 2008 in accordance with the terms of their employment arrangements with the Company (with respect to Dr. Roger G. Stoll, Dr. Mark A. Varney, Dr. Pierre V. Trân and Mr. James H. Coleman, see "Employment and Consulting Agreements"), if applicable, as well as on the basis of the following factors: personal performance, the estimated salary levels in effect for similar positions (as defined by salary surveys comprising companies of similar size within the pharmaceutical/biotech fields with which the Company competes for executive talent), and internal comparability considerations.

Salary levels are typically considered annually as part of the Company's performance review process as well as upon a promotion or other change in job responsibility. Merit based increases to

salaries of named executive officers are based on the Compensation Committee's assessment of the individual's performance.

Annual Incentive Compensation

The Compensation Committee, in consultation with the Chief Executive Officer (except where the Chief Executive Officer's compensation is being determined), may award annual incentives based upon performance targets to named executive officers and other employees. The Compensation Committee may also award bonuses in cases where such performance targets are not met if it determines that the circumstances warrant such action. For the fiscal year ended December 31, 2008, the performance targets for the named executive officers included, but were not limited to, making clinical progress with the Company's AMPAKINE® technology, securing additional finances and operating within established financial expectations and preparing the Company's annual assessment of its internal control system, as required by the Sarbanes-Oxley Act of 2002. The weight given to each factor varied from individual to individual. Additionally, each named executive officer has a discretionary portion of the annual incentive linked to achievement of non-financial goals, which differ depending upon the responsibilities of the named executive officer in question.

In June 2004, the Board of Directors approved a performance-based incentive compensation program for named executive officers that included cash bonus targets of 20% of respective annual base salaries. Actual bonus amounts may differ from the established targets based upon the performance of the Company, as well as that of the individual named executive officer, as compared to established goals. For the years ended December 31, 2006, 2007 and 2008, no performance bonuses were awarded to the named executive officers.

Long-Term Incentive Compensation

The 2006 Stock Incentive Plan was approved by the Company's stockholders at the 2006 Annual Meeting of Stockholders and is the successor plan to the 1996 Stock Incentive Plan, which expired on October 25, 2006. Under the 2006 Stock Incentive Plan, the Compensation Committee may award incentive stock options, nonqualified stock options, restricted stock grants, stock payment awards, stock appreciation rights, restricted stock units and dividend equivalents. The 2006 Stock Incentive Plan provides the Compensation Committee with the ability to align the interests of the named executive officers with those of the stockholders and provide each individual with a significant incentive to manage the Company from the perspective of an owner with an equity stake in the business. The number of shares subject to each award is based upon the named executive officer's tenure, level of responsibility and relative position in the Company. During the fiscal year ended December 31, 2008, stock options totaling 1,507,000 shares were granted to employees under the 2006 Stock Incentive Plan, including awards granted as part of the hiring process for select employees. Of the 1,507,000 stock options granted under the 2006 Stock Incentive Plan, 650,000 were granted as long-term incentive compensation to the named executive officers.

The exercise price for the stock options is no less than the fair market value of the stock on the date of the grant. Options generally vest at a rate of 33 1/3% per year starting on the anniversary date of the option grant and are contingent upon the officer's continued employment with the Company. Accordingly, the option will provide a return to the named executive officer only if he or she remains in the Company's employment and the market price of the Company's Common Stock appreciates over the option term.

Annual awards of stock options to named executive officers are made at the discretion of the Compensation Committee. Newly-hired named executive officers receive their award of stock options on their first date of employment, as approved in advance by the Compensation Committee.

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

Perquisites and Other Personal Benefits

The Company provides named executive officers with perquisites and other personal benefits that the Compensation Committee believes are reasonable and consistent with its overall compensation program to better enable the Company to attract and retain superior employees for key positions. The Compensation Committee periodically reviews the levels of perquisites and other personal benefits provided to named executive officers.

Upon relocation, named executive officers may receive, at the discretion of the Compensation Committee, a relocation allowance and a mortgage interest subsidy, whereby the Company will pay a specified percentage of the principal amount of a mortgage on a named executive officer's primary residence during a specified period of time, subject to continued employment of the named executive officer by the Company.

Attributed costs of the perquisites and other personal benefits described above for the named executive officers for the fiscal year ended December 31, 2008, are included in the column titled, "All Other Compensation" of the "Summary Compensation Table" on page 48.

The Company has entered into severance agreements with certain key employees, including the named executive officers. In March 2009, the Company also entered into retention agreements with certain key employees including the named executive officers, as described under the heading "Transactions with Related Persons" on page 64. The severance agreements and the retention agreements are designed to promote stability and continuity of senior management. Information regarding applicable payments under severance agreements for the named executive officers is provided under the headings "Potential Payments Upon Termination or Change-in-Control" and "Employment and Consulting Agreements" on pages 54 and 56, respectively.

Tax and Accounting Implications

Deductibility of Executive Compensation. The Compensation Committee has reviewed the Company's executive compensation plans to determine if revisions may be necessary due to provisions of Section 162(m) of the Internal Revenue Code, which generally disallows a tax deduction to public corporations for compensation paid to any of the Company's executive officers in excess of \$1,000,000 during any fiscal year. It is the current policy of the Compensation Committee to preserve, to the extent reasonably possible, the Company's ability to obtain a corporate tax deduction for compensation paid to executive officers of the Company to the extent consistent with the best interests of the Company and its stockholders.

Nonqualified Deferred Compensation. On October 22, 2004, the American Jobs Creation Act of 2004 was signed into law, changing the tax rules applicable to nonqualified deferred compensation arrangements. Compliance with the final regulations is not yet required, if, as is the case, the Company has operated all of its compensation plans, programs and other arrangements on the basis of a

reasonable, good faith interpretation of the statutory provisions and the official guidance published by the Internal Revenue Service since January 1, 2005.

Accounting for Stock-Based Compensation. Commencing on January 1, 2006, the Company began accounting for stock-based payments, including its 2006 Stock Incentive Plan, in accordance with the requirements of FASB Statement 123(R).

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, 2008, 2007 and 2006. Other than the hiring bonuses incurred in 2007 in connection with the addition of the Company's new Chief Medical Officer, Dr. Pierre Trân, and in 2006 in connection with the addition of the Company's Chief Operating Officer and Chief Scientific Officer, and now President and Chief Executive Officer, Dr. Mark Varney, the named executive officers did not earn any cash bonus payments during the fiscal years ended December 31, 2008, 2007 or 2006. The information under the heading, "Stock Awards" for all applicable named executive officers includes the fair market value of shares of the Company's 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 and the heading, "All Other Compensation" for Dr. Stoll for the year ended December 31, 2006 includes the estimated value of equity awards recorded for financial reporting purposes using the Black-Scholes option pricing model, as explained more fully below, and does not reflect actual cash payments or actual dollars awarded.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$)(1)	Option Awards (\$)(2)	All Other Compensation (\$)(3)	Total (\$)
Roger G. Stoll, Ph.D. Executive Chairman	2008	\$370,000	—	—	\$187,985	—	\$557,985
	2007	\$350,000	—	—	\$338,949	\$37,168 (4)	\$726,117
	2006	\$336,500	—	—	\$415,596	\$308,756 (5)	\$1,060,852
Mark A. Varney, Ph.D. President and Chief Executive Officer	2008	\$347,277	—	—	\$292,764	\$88,000 (6)	\$728,041
	2007	\$318,000	—	—	\$475,330	\$147,545 (7)	\$940,875
	2006	\$277,308	\$25,000 (8)	—	\$866,285	\$197,856 (9)	\$1,386,449
Pierre V. Trân, M.D., M.M.M. (10) Chief Medical Officer and Vice President of Clinical Development	2008	\$305,000	—	—	\$137,792	\$86,400 (12)	\$529,192
	2007	\$63,542	\$80,000 (11)	—	\$151,068	\$18,000 (12)	\$312,610
Maria S. Messinger, CPA Vice President, Chief Financial Officer and Corporate Secretary	2008	\$243,000	—	\$14,870	\$76,689	—	\$334,559
	2007	\$225,000	—	—	\$125,697	—	\$350,697
	2006	\$209,000	—	—	\$152,371	—	\$361,371
James H. Coleman Senior Vice President, Business Development	2008	\$250,000	—	\$5,464	\$76,689	\$9,280 (13)	\$341,433
	2007	\$240,000	—	—	\$125,697	\$9,280 (13)	\$374,977
	2006	\$232,000	—	—	\$152,371	\$10,123 (13)	\$394,494

- (1) Amounts represent the fair market value of shares issued in exchange for cancellation of accrued paid time off in excess of fifty (50) days as of the end of May 2008, based upon the employee's current rate of compensation per day. The exchange took place on May 30, 2008 based on the closing price per share of the Company's common on the NYSE Amex of \$0.78 on such date and rounded to the nearest whole share. In connection with the transaction, Ms. Messinger and Mr. Coleman received 19,064 and 7,005 shares of the Company's common stock, respectively. The shares of the Company's common stock were issued under the Company's 2006 Stock Incentive Plan.
- (2) Amounts represent the dollar amount recognized for financial statement reporting purposes for the fiscal years ended December 31, 2008, 2007 and 2006, as indicated, in accordance with FAS 123(R) and may include amounts from awards granted prior to those dates. Assumptions used in the calculation of these amounts are included in footnote 1 to the Company's audited financial statements for the fiscal year ended December 31, 2008, included in this Annual Report on Form 10-K.

- (3) In accordance with Securities and Exchange Commission rules, “Other Annual Compensation” in the form of perquisites and other personal benefits has been omitted where the aggregate amount of such perquisites and other personal benefits was less than \$10,000.
- (4) Amount represents reimbursement of certain of Dr. Stoll’s deferred moving expenses.
- (5) Amount does not represent a cash payment. Amount represents the dollar amount recognized for financial statement reporting purposes for the fiscal year ended December 31, 2006, in accordance with FAS 123(R), for options granted to Dr. Stoll in lieu of cash reimbursement of certain relocation expenses. Assumptions used in the calculation of these amounts are included in footnote 1 to the Company’s audited financial statements for the fiscal year ended December 31, 2006, included in the Company’s Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 15, 2007.
- (6) Represents payments by the Company to Dr. Varney under the terms of his employment agreement and related to his relocation to southern California, including \$55,000 for a mortgage subsidy, subject to a gross-up factor of 1.6, or \$33,000, to cover his additional income tax liabilities. See “Employment and Consulting Agreements” on page 56.
- (7) Represents payments by the Company to Dr. Varney under the terms of his employment agreement and related to Dr. Varney’s relocation to southern California, including \$61,000 for a mortgage subsidy, subject to a gross-up factor of 1.6, or \$36,600, to cover his additional income tax liabilities, and \$49,945 to reimburse certain costs related to the sale of his former residence. See “Employment and Consulting Agreements” on page 56.
- (8) Represents payment by the Company of a hiring bonus to Dr. Varney under his employment agreement. See “Employment and Consulting Agreements” on page 56.
- (9) Represents amounts paid for a mortgage subsidy, temporary housing and other fees and expenses related to Dr. Varney’s relocation to southern California, pursuant to the terms of his employment agreement. See “Employment and Consulting Agreements” on page 56. Amount also includes the accrued payment for the shortfall between the sales price and the equity for the home that he sold in connection with his relocation, pursuant to the terms of his Negative Equity Agreement with the Company dated February 1, 2007.
- (10) Dr. Tr n was named Chief Medical Officer and Vice President of Clinical Development in October 2007.
- (11) Represents payment by the Company to Dr. Tr n under his employment agreement to compensate him for his lost bonus opportunity as a result of his departure from his prior employer in order to join the Company in October 2007. See “Employment and Consulting Agreements” on page 56.
- (12) Represents amounts paid for temporary housing, subject to a gross-up factor to cover related income tax liabilities, in connection with Dr. Tr n’s relocation to southern California, pursuant to the terms of his employment agreement. See “Employment and Consulting Agreements” on page 56.
- (13) Represents premiums for life insurance for Mr. Coleman, in lieu of participation in the Company’s medical benefit plans.

The table below details the cash and estimated values for the non-cash components of the above summary compensation information for each named executive officer for the years ended December 31, 2008, 2007 and 2006. The non-cash components include the estimated value of equity awards as recorded for financial statement reporting purposes, using the Black-Scholes option pricing model, as described more fully in the table above.

Name and Principal Position	Year	Total Cash Compensation (\$)	Total Non-cash Compensation (\$)	Total (\$)
Roger G. Stoll, Ph.D. Executive Chairman	2008	\$370,000	\$187,985	\$557,985
	2007	\$387,168	\$338,949	\$726,117
	2006	\$336,500	\$724,352	\$1,060,852
Mark A. Varney, Ph.D. President and Chief Executive Officer	2008	\$435,277	\$292,764	\$728,041
	2007	\$465,545	\$475,330	\$940,875
	2006	\$500,164	\$866,285	\$1,386,449
Pierre V. Trân, M.D., M.M.M. Chief Medical Officer and Vice President of Clinical Development	2008	\$391,400	\$137,792	\$529,192
	2007	\$161,542	\$151,068	\$312,610
Maria S. Messinger, CPA Vice President, Chief Financial Officer and Corporate Secretary	2008	\$243,000	\$91,559	\$334,559
	2007	\$225,000	\$125,697	\$350,697
	2006	\$209,500	\$152,371	\$361,371
James H. Coleman Senior Vice President, Business Development	2008	\$259,280	\$82,153	\$341,433
	2007	\$249,280	\$125,697	\$374,977
	2006	\$242,123	\$152,371	\$394,494

Grants of Plan Based Awards

The table below sets forth grants of plan-based awards to each of the named executive officers during the fiscal year ended December 31, 2008.

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards(1)			All Other Stock Awards: Number of Shares of Stock or Units (#)(2)	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards (\$/Sh)	Grant Date Fair Value of Stock and Option Awards (\$)
		Threshold (\$)	Target (\$)	Maximum (\$)				
Roger G. Stoll, Ph.D.	01/18/2008	—	—	—	—	200,000	\$0.54	\$87,280
	N/A	—	\$74,000	\$74,000	—	—	—	N/A
Mark A. Varney, Ph.D.	08/13/2008	—	—	—	—	200,000 (3)	\$0.97	\$154,653
	01/18/2008	—	—	—	—	200,000	\$0.54	\$87,280
	N/A	—	\$72,400	\$72,400	—	—	—	N/A
Pierre V. Tran, M.D., M.M.M.	01/18/2008	—	—	—	—	50,000	\$0.54	\$21,820
	N/A	—	\$61,000	\$91,500	—	—	—	N/A
Maria S. Messinger, CPA	05/30/2008	—	—	—	19,064	—	\$0.78	\$14,870
	01/18/2008	—	—	—	—	100,000	\$0.54	\$43,640
	N/A	—	\$48,600	\$48,600	—	—	—	N/A
James H. Coleman	05/30/2008	—	—	—	7,005	—	\$0.78	\$5,464
	01/18/2008	—	—	—	—	100,000	\$0.54	\$43,640
	N/A	—	\$50,000	\$125,000	—	—	—	N/A

- (1) The amounts shown reflect the target and maximum amounts based on an individual's current salary and position that can be received under the Company's performance-based incentive compensation program and the terms of such individual's employment agreement, if applicable.
- (2) Represents the number of shares of the Company's common stock issued in exchange for cancellation of accrued paid time off in excess of fifty (50) days as of the end of May 2008, based upon the employee's current rate of compensation per day. The exchange took place on May 30, 2008 based on the closing price per share of the Company's common on the NYSE Amex of \$0.78 on such date and rounded to the nearest whole share. The shares of the Company's common stock were issued under the Company's 2006 Stock Incentive Plan. The fair market value of these shares also has been included in the Summary Compensation Table on page 48.
- (3) In connection with his appointment as President and Chief Executive Officer, in August 2008 Dr. Varney received options to purchase 200,000 shares of the Common Stock of the Company with an exercise price of \$0.97 per share, representing the closing price of the Company's Common Stock on the NYSE Amex on the grant date.

Narrative to Summary Compensation Table and Grants of Plan Based Awards Table

See "Compensation Discussion and Analysis" on page 43 and "Employment and Consulting Agreements" on page 56 for further discussion of compensation arrangements pursuant to which the amounts listed under the Summary Compensation Table and Grants of Plan-Based Awards Table were paid or awarded and the criteria for such payment or award.

Outstanding Equity Awards at Fiscal Year-End

There were no outstanding unvested stock awards as of December 31, 2008. The table below relates solely to outstanding option awards as of December 31, 2008. Except as noted in the footnotes below, the options listed below vest at a rate of 33 1/3% per year commencing on the first anniversary of the date of grant and have a ten-year term.

Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards:	Option Exercise Price	Option Expiration Date
			Number of Securities Underlying Unexercised Unearned Options (#)		
Roger G. Stoll, Ph.D.	—	200,000	—	\$0.54	01/18/2018
	200,000	100,000	—	\$1.30	12/18/2016
	205,017 (1)	—	—	\$2.95	02/09/2016
	300,000	—	—	\$2.35	12/01/2015
	300,000	—	—	\$2.68	12/16/2014
	600,000	—	—	\$2.76	12/09/2013
	14,545 (2)	—	—	\$4.40	09/02/2013
	1,061 (3)	—	—	\$3.77	08/29/2013
	2,326 (3)	—	—	\$1.72	07/31/2013
	2,222 (3)	—	—	\$1.80	06/30/2013
	2,247 (3)	—	—	\$1.78	05/30/2013
	3,604 (3)	—	—	\$1.11	04/30/2013
	5,556 (3)	—	—	\$0.72	03/31/2013
	5,634 (3)	—	—	\$0.71	02/28/2013
	600,000 (4)	—	—	\$0.78	08/13/2012
30,000	—	—	\$2.68	04/09/2012	
Mark A. Varney, Ph.D.	—	200,000	—	\$0.97	08/13/2018
	—	200,000	—	\$0.54	01/18/2018
	166,667	83,333	—	\$1.30	12/18/2016
	566,667 (5)	183,333	—	\$2.95	01/30/2016
Pierre V. Trân, M.D., M.M.M.	—	50,000	—	\$0.54	01/18/2018
	360,416 (6)	389,584	—	\$0.66	10/16/2017
Maria S. Messinger, CPA	—	100,000	—	\$0.54	01/18/2018
	83,334	41,666	—	\$1.30	12/18/2016
	100,000	—	—	\$2.35	12/01/2015
	100,000	—	—	\$2.68	12/16/2014
	75,000	—	—	\$2.76	12/09/2013
	663 (3)	—	—	\$3.77	08/29/2013
	1,453 (3)	—	—	\$1.72	07/31/2013
	1,389 (3)	—	—	\$1.80	06/30/2013
	1,404 (3)	—	—	\$1.78	05/30/2013
	2,252 (3)	—	—	\$1.11	04/30/2013
	3,472 (3)	—	—	\$0.72	03/31/2013
	3,521 (3)	—	—	\$0.71	02/28/2013
	50,000	—	—	\$0.75	12/16/2012
	40,000	—	—	\$2.27	04/24/2011
	40,000	—	—	\$0.75	12/17/2009
James H. Coleman	—	100,000	—	\$0.54	01/18/2018
	83,334	41,666	—	\$1.30	12/18/2016
	100,000	—	—	\$2.35	12/01/2015
	100,000	—	—	\$2.68	12/16/2014
	75,000	—	—	\$2.76	12/09/2013
	840 (3)	—	—	\$3.77	08/29/2013
	1,841 (3)	—	—	\$1.72	07/31/2013
	1,759 (3)	—	—	\$1.80	06/30/2013
	1,779 (3)	—	—	\$1.78	05/30/2013
	2,853 (3)	—	—	\$1.11	04/30/2013
	4,398 (3)	—	—	\$0.72	03/31/2013
	4,460 (3)	—	—	\$0.71	02/28/2013
	50,000 (7)	—	—	\$0.80	02/11/2013
	100,000	—	—	\$0.75	12/16/2012

50,000	—	—	\$2.11	10/09/2011
125,000	—	—	\$3.02	05/17/2010
50,000	—	—	\$3.02	05/10/2010

- (1) Dr. Stoll received options in lieu of cash reimbursement of real estate expenses incurred in connection with the relocation of his principal residence to southern California. These options were fully vested on the date of grant and have an exercise price equal to \$2.95, representing the closing price of the Company's Common Stock on the NYSE Amex on the grant date.
- (2) Beginning in May 2003, Dr. Stoll voluntarily deferred his entire base salary, as previously reduced. In September 2003, Dr. Stoll agreed to accept stock options to purchase 14,545 shares of the Company's Common Stock in lieu of this deferred salary. The number of options issued represents \$64,000 of his deferred salary divided by the closing sale price of the Company's Common Stock on the NYSE Amex on the date that Dr. Stoll's salary was re-instated in September 2003. These options were fully vested on the date of grant.
- (3) Represents stock options issued in lieu of a portion of base salary. The number of options issued represents the dollar value of base salary not received by the named executive officer divided by the closing sale price of the Company's Common Stock on the NYSE Amex on the last trading day of the month during which the portion of base salary was not received by the named executive officer. These options were fully vested on the date of grant.
- (4) In connection with his employment, Dr. Stoll was granted options to purchase 600,000 shares of Common Stock at an exercise price of \$0.78 per share, representing the closing price of the Company's Common Stock on the NYSE Amex on the date of grant. Of the 600,000 options granted, 200,000 options vested immediately. Another 200,000 options vested upon securing the amendment to the Company's agreement with Les Laboratoires Servier in October 2002. The remaining 200,000 options vested upon the achievement of pre-determined milestones, all of which were met by the beginning of 2007.
- (5) In connection with his employment, Dr. Varney was granted options to purchase 750,000 shares of Common Stock at an exercise price of \$2.95 per share, representing the closing price of the Company's Common Stock on the date of grant. Of the 750,000 options granted, 100,000 options vested upon his first date of employment on January 30, 2006; 100,000 options vested one-year from his initial date of employment, or January 30, 2007; and 550,000 options shall vest in equal annual installments over a three-year period from the date of grant.
- (6) In connection with his employment, Dr. Tr an was granted options to purchase 750,000 shares of Common Stock at an exercise price of \$0.66 per share, representing the closing price of the Company's Common Stock on the date of grant. Of the 750,000 options granted, 200,000 options vested upon his first date of employment on October 16, 2007 and 550,000 options shall vest in equal monthly installments over a four-year period from the date of grant.
- (7) During 2003, Mr. Coleman agreed to accept stock options in lieu of the cash bonus provided in his employment agreement. These options were fully vested on the date of grant and have an exercise price per share equal to \$0.80, representing the closing price of the Company's Common Stock on the NYSE Amex on the grant date.

Option Exercises and Stock Vested

None of the Company's named executive officers exercised any options to purchase shares of the Company's common stock or had any outstanding unvested stock awards during the year ended December 31, 2008.

Potential Payments Upon Termination or Change-in-Control

The table below reflects the amount of compensation payable to each of the named executive officers of the Company in the event of termination of each named executive officer's employment. The amount of compensation payable to each named executive officer in the event of death or disability, for cause termination, voluntary termination, termination without cause or for good reason, and termination following a change of control is shown below. The amounts shown assume such termination was effective as of December 31, 2008, and thus include amounts earned through such time and are estimates of the amounts that would be paid out to the named executive officers upon their termination. However, the actual amounts to be paid out can only be determined at the time of such named executive officer's separation from the Company. The named executive officers have each entered into employment agreements and/or severance agreements governing such payments. See "Employment and Consulting Agreements" on page 56. In March 2009, the named executive officers also entered into retention agreements, the impact of which is not considered in this section titled "Potential Payments Upon Termination or Change-in-Control" due to the effective date of such agreements being after December 31, 2008, however, the terms of such agreements are discussed under the heading "Transactions with Related Persons" on page 64.

Payments Made Upon Termination

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

Payments Made Upon Termination Due to Death or Disability

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

Payments Made Upon a Change-In-Control Without Termination

If the Company is subject to a change-in-control, irrespective of whether a termination of employment occurs, all stock options held by the named executive officer will automatically vest and become exercisable (with the exception of Mr. Coleman who will receive accelerated vesting for one additional year and only if he is terminated).

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

If a named executive officer's employment is terminated in connection with or, for Dr. Trân within six (6) months following, a change of control without cause or for good reason (other than Dr. Trân whose agreement does not include termination for good reason), then the named executive officers shall be entitled to the benefits listed under the headings "Payments Made Upon Termination" and "Payments Made Upon a Change-In-Control Without Termination." Additionally, in connection with such event, Dr. Trân will receive a severance payment of twelve months of his base salary and twelve (12) months continued health and benefits coverage. The following tables show the potential payments upon termination due to death or disability, for cause, voluntary, without cause, for good reason or in connection with a change-in-control of the Company for each of the named executive officers. For purposes of disclosures, the table assumes that the termination occurred as of December 31, 2008. Except for Dr. Stoll's, Dr. Varney's and Mr. Coleman's base salary benefits and all named executive officers' health care and disability benefits, as applicable, which are payable monthly, all amounts below are payable in a lump sum.

Name	Executive Benefits and Payments Upon Termination	Death or Disability	Termination for Cause	Voluntary Termination	Termination Without Cause Or For Good Reason	Termination Without Cause or For Good Reason in Connection With Change-in-Control
Roger G. Stoll, Ph.D.	Base Salary	\$247,500 (1)	—	—	\$370,000	\$370,000
	Accrued Vacation Pay	\$30,811	\$30,811	\$30,811	\$30,811	\$30,811
	Stock Options Accelerated	—	—	—	\$6,000 (2)	\$6,000 (2)
	Health Care	—	—	—	—	—
	Disability Income	\$236,372 (1)	—	—	—	—
	Life Insurance Benefits	\$482,000 (3)	—	—	—	—
Mark A. Varney, Ph.D.	Base Salary	\$239,500 (4)	—	—	\$347,277	\$347,277
	Accrued Vacation Pay	\$22,169	\$22,169	\$22,169	\$22,169	\$22,169
	Stock Options Accelerated	—	—	—	—	\$6,000 (2)
	Health Care	—	—	—	—	—
	Disability Income	\$1,926,567 (5)	—	—	—	—
	Life Insurance Benefits	\$724,000 (3)	—	—	—	—
Pierre V. Trân, M.D., M.M.M.	Base Salary	—	—	—	—	\$305,000 (6)
	Accrued Vacation Pay	\$21,951	\$21,951	\$21,951	\$21,951	\$21,951
	Stock Options Accelerated	—	—	—	—	\$1,500 (2) (6)
	Health Care	—	—	—	—	\$17,512 (6) (7)
	Disability Income	\$1,510,215 (5)	—	—	—	—
	Life Insurance Benefits	\$611,000 (3)	—	—	—	—
Maria S. Messinger	Base Salary	—	—	—	\$243,000	\$243,000
	Accrued Vacation Pay	\$44,981	\$44,981	\$44,981	\$44,981	\$44,981
	Stock Options Accelerated	—	—	—	—	\$3,000 (2)
	Health Care	—	—	—	\$17,293 (7)	\$17,293 (7)
	Disability Income	\$1,983,994 (5)	—	—	—	—
	Life Insurance Benefits	\$486,000 (3)	—	—	—	—
James H. Coleman	Base Salary	\$127,500 (1)	—	—	\$250,000	\$250,000
	Accrued Vacation Pay	\$45,275	\$45,275	\$45,275	\$45,275	\$45,275
	Stock Options Accelerated	—	—	—	\$1,000	\$1,000 (8)
	Health Care	—	—	—	—	—
	Disability Income	\$207,951	—	—	—	—
	Life Insurance Benefits	\$326,000 (3)	—	—	—	—

- (1) In connection with the terms of the related employment agreement with the named executive officer, represents the difference between any disability insurance proceeds and twelve (12) months of the named executive officer's then current salary. The disability income shown reflects the estimated payment for short-term and long-term disability under the Company's benefit plan.
- (2) The value of accelerated vesting of options was estimated under the intrinsic value method. The closing price of the Company's Common Stock on December 31, 2008 was compared to the exercise prices to determine the spread for each option, and the spread was applied to "in-the-money" options that were unvested as of December 31, 2008. For the purpose of this calculation, the Company used \$0.57, which was the closing price per share of the Company's Common Stock on the NYSE Amex on the last business day of the fiscal year.
- (3) Reflects the estimated present value of the proceeds payable to the named executive officer's beneficiaries upon his or her death.
- (4) In connection with the terms of the related employment agreement with the named executive officer, represents the difference between any disability insurance proceeds and twelve (12) months of the named executive officer's base salary, based upon the average monthly base salary for the twelve (12) months immediately preceding the disability event.
- (5) Reflects the estimated present value of all future payments that the named executive officer would be entitled to receive under the Company's disability program. The named executive officer would be entitled to receive such benefits until he or she reaches age 65.
- (6) Represents benefits in the event of termination of employment by the Company without cause in connection with, or within six (6) months following a change of control. Benefits do not apply in the event of termination of employment by the named executive officer for good reason.
- (7) Reflects the estimated present value of the cost of coverage for future premiums that will be paid on behalf of the named executive officer under the Company's health and welfare plans.
- (8) The value of accelerated vesting of options was estimated under the intrinsic value method. The closing price of the Company's Common Stock on December 31, 2008 was compared to the exercise prices to determine the spread for each option, and the spread was applied to "in-the-money" options that were unvested as of December 31, 2008 and scheduled to vest as of December 31, 2009. For the purpose of this calculation, the Company used \$0.57, which was the closing price per share of the Company's Common Stock on the NYSE Amex on the last business day of the fiscal year.

Employment and Consulting Agreements

Roger G. Stoll, Ph.D. has served as a director of the Company since April 2002 and became Chairman, President and Chief Executive Officer of the Company in August 2002. In August 2008, Dr. Stoll became the Executive Chairman of the Company and Dr. Varney became the President and Chief Executive Officer. His employment agreement originally included a three-year term, was subsequently amended to include another three-year term expiring in August 2008 and another one-year term expiring in August 2009. As of December 31, 2008, his employment called for a base salary of \$370,000 per year, subject to annual review by the Compensation Committee of the Board of Directors. In connection with the original offer for his employment, Dr. Stoll was granted options to purchase 600,000 shares of Common Stock at an exercise price of \$0.78 per share, representing 100% of the fair market value as of the date of grant. Of the 600,000 options granted, 200,000 options vested immediately. Another 200,000 options vested upon securing the amendment to the Company's agreement with its collaborative partner, Servier, in October 2002. The remaining 200,000 options vested upon achievement of pre-determined milestones, all of which were met by the beginning of 2007. Under the terms of his employment agreement, in the event of termination of his employment, under certain circumstances Dr. Stoll is entitled to compensation equal to twelve (12) months of his then current salary. In addition, in the event of his termination of employment, in certain circumstances, any vested options granted to Dr. Stoll remain exercisable for the remainder of the original option term and any unvested options granted to Dr. Stoll in connection with his employment, as detailed above, may be subject to accelerated vesting and remain exercisable for the remainder of the original option term. In the event of termination due to disability, Dr. Stoll will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary. Further, upon a change-in-control of the Company, all unvested options then held by Dr. Stoll shall be subject to accelerated vesting.

Mark A. Varney, Ph.D. joined the Company as Chief Operating Officer and Chief Scientific Officer in January 2006 and was named President and Chief Executive Officer in August 2008. His employment agreement provides for a three-year term through August 2011, calls for a base salary of \$362,000 per year as of December 31, 2008, and an annual bonus, at the discretion of the Board of Directors of the Company. In connection with his employment, Dr. Varney was granted options to purchase 750,000 shares of Common Stock at an exercise price of \$2.95 per share, representing 100% of the fair market value as of the date of grant. The options have a ten-year term and vest according to the following schedule: (i) 100,000 upon the date of employment; (ii) 100,000 one year from the date of employment and (iii) 550,000 in equal annual installments over a three-year period. In connection with his naming as President and Chief Executive Officer, Dr. Varney was granted options to purchase 200,000 shares of Common Stock at an exercise price of \$0.97 per share, representing 100% of the fair market value as of the date of grant. The options have a ten-year term and vest in equal annual installments over a three-year period. Pursuant to the terms of his employment agreement, the Company will provide Dr. Varney with a mortgage subsidy over five years, terminating on the earlier of the date of his termination of employment or August 2011, in the form of a monthly payment, whereby the Company will pay 6% of the principal amount of a mortgage (which principal amount shall not to exceed \$1,200,000) on his primary residence during the first year, which amount declines by 1% each year thereafter, and which amount is grossed up by a factor of 1.6 to cover Dr. Varney's additional income tax liabilities. In addition to the foregoing, Dr. Varney received a \$25,000 hiring bonus, \$15,000 to cover miscellaneous relocation expenses, temporary housing and reimbursement of real estate closing fees, sales commissions and moving costs. In the event of termination of Dr. Varney's employment without cause or for good reason, under certain circumstances he is entitled to receive compensation of twelve (12) months of his base salary based upon the average monthly base salary for the twelve (12) months immediately prior to the termination event and his vested option will remain exercisable for the balance of their original terms. In the event of termination due to disability, Dr. Varney will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary. In addition, in the event of a change-in-control of the Company, any unvested options then held by Dr. Varney shall be subject to accelerated vesting.

Pierre V. Trân, M.D., M.M.M. joined the Company as Chief Medical Officer and Vice President, Clinical Development in October 2007. His employment letter is terminable at will by the Company or Dr. Trân and as of December 31, 2008 called for a base salary of \$305,000 per year with an annual bonus, at the discretion of the Board of Directors of the Company, of up to 30% of his base salary. In connection with his employment, Dr. Trân was granted options to purchase 750,000 shares of Common Stock at an exercise price of \$0.66 per share, representing 100% of the fair market value as of the date of grant. The options have a ten-year term and vest according to the following schedule: 200,000 upon the date of employment and 550,000 in equal monthly installments over a four-year period. Pursuant to the terms of the employment letter, the Company will provide Dr. Trân with a mortgage subsidy over four years in the form of a monthly payment, whereby the Company will pay 5% of the principal amount of the mortgage (which principal amount shall not to exceed \$600,000) during the first year, which amount declines by 1% each year thereafter, and which amount is grossed up to cover Dr. Trân's additional income tax liabilities. In addition to the foregoing, the Company made a one-time payment to Dr. Trân of \$80,000 to cover a lost bonus opportunity from his previous employer. Dr. Trân also will receive temporary housing and reimbursement of real estate closing fees, sales commissions and moving costs. In the event of termination of Dr. Trân's employment without cause in connection with or within six (6) months following a change-in-control of the Company, under certain circumstances he is entitled to receive compensation of twelve (12) months of his then current salary plus continued employee benefits for a period of twelve (12) months thereafter. In addition, in the event of a change-in-control of the Company any unvested options then held by Dr. Trân shall be subject to accelerated vesting.

Maria S. Messinger joined the Company as Controller in September 1994 and was named as Vice President, Chief Financial Officer and Corporate Secretary in December 1999. Under the terms of her severance agreement, in the event of termination of her employment, under certain circumstances Ms. Messinger is entitled to receive compensation of twelve (12) months of her then current annual base salary, which as of December 31, 2008 was \$243,000, a pro-rated bonus (if applicable) and continued employee

benefits for a period of twelve (12) months thereafter. Additionally, in the event of a change-in-control of the Company, any unvested options then held by Ms. Messinger shall be subject to accelerated vesting.

James H. Coleman joined the Company as Senior Vice President, Business Development in May 2000. His employment agreement, as amended to date, provides a base salary of \$250,000 per year as of December 31, 2008, with an annual bonus between 0 and 50% of his annual base salary, at the discretion of the Chief Executive Officer and subject to approval by the Compensation Committee of the Board of Directors of the Company. In connection with his employment, Mr. Coleman was granted options to purchase 125,000 shares of Common Stock at an exercise price of \$3.02 per share, representing 100% of the fair market value as of the date of grant. The options vested in equal annual installments over a three-year period and have a ten-year term. In the event of termination of his employment, Mr. Coleman is entitled, under certain circumstances, to receive compensation of twelve (12) months of his then current salary and any unvested options then held by Mr. Coleman shall be subject to accelerated vesting for an additional one year period. Additionally, in the event of termination due to disability, Mr. Coleman will be entitled to receive a salary benefit equal to the difference between any insurance proceeds received and twelve (12) months salary.

Steven A. Johnson, Ph.D. joined the Company as a Senior Scientist in June 1994 and was named as Vice President, Preclinical Development in February 2007. Under the terms of his severance agreement, in the event of termination of Dr. Johnson's employment without cause in connection with or within six (6) months following a change-in-control of the Company, under certain circumstances he is entitled to receive compensation of twelve (12) months of his then current salary, which as of December 31, 2008 was \$221,000 per year, plus continued employee benefits for a period of twelve (12) months thereafter. In addition, in the event of a change-in-control of the Company, any unvested options then held by Dr. Johnson shall be subject to accelerated vesting.

Drs. Carl W. Cotman and Gary S. Lynch (both of whom are co-founders and Scientific Directors of the Company) have each entered into a consulting agreement with the Company. Dr. Lynch receives a consulting fee of \$65,000 per year and Dr. Cotman receives a consulting fee of \$23,000 per year. The term of each consulting agreement commenced in November 1987 and will continue until terminated by the respective parties thereto. The consulting agreements obligate the respective consultants to make themselves available to the Company for consulting and advisory services for an average of three days per month.

Dr. Gary D. Tollefson entered into a consulting agreement with the Company pursuant to which he received a retainer of \$6,000 per month. The consulting agreement obligated Dr. Tollefson to be available for up to two eight-hour work days per month at such times and places reasonably agreed to between the parties. The term of his consulting agreement commenced in mid-April 2004 and continued until his death in March 2009. In connection with his engagement as a consultant, in May 2004 Dr. Tollefson was granted options to purchase 150,000 shares of Common Stock at an exercise price of \$2.20 per share, representing 100% of the fair market value as of the date of grant. The options vested in equal annual installments over a three-year period and have a ten-year term.

Compensation Committee Interlocks and Insider Participation

For the fiscal year ended December 31, 2008, members of the Company's Compensation Committee consisted of Dr. Johnson, Mr. Allnutt, and Mr. Casamento, none of whom has previously served or currently serves as an executive officer or employee of the Company or any of its subsidiaries. The Company is not aware of any "compensation committee interlocks" that existed during the fiscal year ended December 31, 2008.

Compensation Committee Report

The Compensation Committee of the Company has reviewed and discussed the Compensation Discussion and Analysis required by Item 402(b) of Regulation S-K with management and, based on such review and discussions, the Compensation Committee recommended to the Board of Directors that the Compensation Discussion and Analysis be included in this Annual Report on Form 10-K.

THE COMPENSATION COMMITTEE

M. Ross Johnson, Chairman
Robert F. Allnutt
Charles J. Casamento

Director Compensation

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

During 2008, each non-employee director was entitled to receive \$4,000 at each Board of Directors meeting attended. Also, the Chairman of the Compensation Committee, the Governance and Nominations Committee and the Research and Development Committee receives \$2,000 for each committee meeting attended and other members of the respective committees receive \$1,000 for each committee meeting attended. The Chairman of the Audit Committee receives \$3,000 for each committee meeting attended and the remaining members of the Audit Committee receive \$1,000 for each committee meeting attended. The above amounts are reduced by one-half for Board of Directors meetings that are attended by telephone.

Each non-employee director is automatically granted options to purchase 30,000 shares of common stock upon commencement of service as a director. Additionally, during the year ended December 31, 2008, each non-employee director was automatically granted options to purchase 30,000 shares of common stock on the date of the first meeting of the Board of Directors for the relative calendar year. These nonqualified options have an exercise price equal to 100% of the fair market value of the Common Stock on the date of grant, have a ten-year term and vest in equal increments of 33 1/3% on each anniversary date of the dates of grant, and are otherwise subject to the terms and provisions of the 2006 Stock Incentive Plan.

The above cash compensation and nonqualified option grant provisions do not apply to non-employee directors who serve on the Board of Directors to oversee an investment in the Company. Compensation for such non-employee directors, if appropriate, is determined separately. As of December 31, 2008, none of the Company's directors served on the Board of Directors in such capacity.

Director Summary Compensation Table

The table below summarizes the total compensation paid or earned by each of the non-employee directors for the fiscal year ended December 31, 2008. Directors who are also employees of the Company did not receive any additional compensation for services as a director.

Name	Fees Earned or Paid in Cash (\$)	Option Awards \$(1)	All Other Compensation \$(2)	Total (\$)
Robert F. Allnutt	\$17,000	\$21,623 (3)	—	\$38,623
John F. Benedik, CPA	\$31,000	\$22,724 (4)	—	\$53,724
Charles J. Casamento	\$22,000	\$21,623 (5)	—	\$43,623
Carl W. Cotman, Ph.D.	\$20,000	\$21,623 (6)	\$23,000	\$64,623
Peter F. Drake, Ph.D.	\$23,000	\$21,623 (7)	—	\$44,623
M. Ross Johnson, Ph.D.	\$27,000	\$21,623 (8)	—	\$48,623
Gary D. Tollefson, M.D., Ph.D.	\$15,000	\$21,623 (9)	\$72,000	\$108,623

- (1) Amounts represent the dollar amount recognized for financial statement reporting purposes for the fiscal year ended December 31, 2008, in accordance with FAS 123(R) and may include amounts from awards granted prior to 2008. Assumptions used in the calculation of these amounts are included in footnote 1 to the Company's audited financial statements for the fiscal year ended December 31, 2008, included in this Annual Report on Form 10-K.
- (2) In accordance with Securities and Exchange Commission rules, "All Other Compensation" in the form of perquisites and other personal benefits has been omitted where the aggregate amount of such perquisites and other personal benefits was less than \$10,000. The amounts reflected in this column represent fees paid to such directors in their capacities as consultants to the Company.
- (3) Mr. Allnutt had an aggregate of 226,000 option awards outstanding as of December 31, 2008.
- (4) Mr. Benedik had an aggregate of 85,000 option awards outstanding as of December 31, 2008.
- (5) Mr. Casamento had an aggregate of 240,709 option awards outstanding as of December 31, 2008.
- (6) Dr. Cotman had an aggregate of 203,000 option awards outstanding as of December 31, 2008.
- (7) Dr. Drake had an aggregate of 160,000 option awards outstanding as of December 31, 2008.
- (8) Dr. Johnson had an aggregate of 230,000 option awards outstanding as of December 31, 2008.
- (9) Dr. Tollefson had an aggregate of 285,000 option awards outstanding as of December 31, 2008.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Beneficial Ownership of Common Stock

The following table sets forth, to the knowledge of the Company, certain information regarding the beneficial ownership of the Company's Common Stock as of March 31, 2009, by (i) each person known by the Company to be the beneficial owner of more than 5% of the outstanding Common Stock, (ii) each of the Company's directors, (iii) each of the named executive officers in the Summary Compensation Table and (iv) all of the Company's executive officers and directors as a group. Except as indicated in the footnotes to this table, the Company believes that the persons named in this table have sole voting and investment power with respect to the shares of Common Stock indicated.

Directors, Officers and 5% Stockholders (1)	Shares Beneficially Owned (2)	Percent of Common Stock Beneficially Owned (2)
Robert F. Allnutt	263,167 (3)	*
John F. Benedik	86,667 (4)	*
Charles J. Casamento	227,376 (5)	*
James H. Coleman	992,185 (6)	2.0
Carl W. Cotman, Ph.D.	249,167 (7)	*
Peter F. Drake, Ph.D.	181,667 (8)	*
M. Ross Johnson, Ph.D.	231,667 (9)	*
Maria S. Messinger, CPA	584,886 (10)	1.2
Roger G. Stoll, Ph.D.	2,438,879 (11)	4.9
Gary D. Tollefson, M.D., Ph.D.	286,667 (12)	*
Pierre V. Trân, M.D., M.M.M.	464,374 (13)	*
Mark A. Varney, Ph.D.	1,013,334 (14)	2.1
All executive officers and directors as a group (13 persons)	7,491,482 (15)	13.8

* Less than one percent

- (1) Except as otherwise indicated, the address of such beneficial owner is at the Company's principal executive offices, 15231 Barranca Parkway, Irvine, California 92618.
- (2) Applicable percentage of ownership at March 31, 2009 is based upon 47,615,209 shares of Common Stock outstanding. Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and includes voting and investment power with respect to shares shown as beneficially owned. Shares of Common Stock subject to options or warrants currently exercisable or exercisable within 60 days of March 31, 2009 are deemed outstanding for computing the shares and percentage ownership of the person holding such options or warrants, but are not deemed outstanding for computing the percentage ownership of any other person or entity.
- (3) Includes 197,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (4) Includes 56,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (5) Includes 212,376 shares that may be purchased upon exercise of options within 60 days of March 31, 2009. Excludes 17,653 shares held by Mr. Casamento in a trust over which he does not exercise control.
- (6) Includes 784,598 shares that may be purchased upon exercise of options within 60 days of March 31, 2009. Beneficial ownership of these shares is shared and held by the James Henry and Nancy Irene Coleman III Revocable Trust.
- (7) Includes 174,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (8) Includes 131,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (9) Includes 201,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (10) Includes 535,822 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.

- (11) Includes 2,338,879 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (12) Includes 2,000 shares held by Dr. Tollefson's spouse and 256,667 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (13) Includes 434,374 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (14) Includes 983,334 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.
- (15) Includes 6,746,719 shares that may be purchased upon exercise of options within 60 days of March 31, 2009.

The Company is not aware of any arrangements that may at a subsequent date result in a change of control of the Company.

EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth information regarding outstanding options, warrants and rights and shares reserved for future issuance under our existing equity compensation plans as of December 31, 2008. Our only stockholder approved equity compensation plans consist of the 1996 Stock Incentive Plan (that expired in October 2006) and the 2006 Stock Incentive Plan. Following the expiration of the 1996 Stock Incentive Plan all subsequently granted stock options were and will be issued from the 2006 Stock Incentive Plan.

Plan Category	(a) Number of securities to be issued upon exercise of outstanding options, warrants and rights	(b) Weighted-average exercise price of outstanding options, warrants and rights	(c) Number of securities remaining available for issuance under equity compensation plans (excluding securities reflected in column (a))
Equity compensation plans approved by security holders	11,204,319	1.70	112,386
Equity compensation plans not approved by security holders	350,000 ⁽¹⁾	2.59	---
Total	11,554,319	\$1.73	112,386

⁽¹⁾ In January 2006, as an inducement to the employment of our Chief Operating Officer and Chief Scientific Officer, Mark A. Varney, Ph.D., we issued 250,000 options outside of the 1996 Stock Incentive Plan and the 2006 Stock Incentive Plan. The options have a ten-year term and vest in the following installments: 83,334 on January 30, 2007, 83,333 on January 30, 2008 and 83,333 on January 30, 2009. In March 2007, as an inducement to the employment of our Head of Medicinal Chemistry, Leslie J. Street, Ph.D., we issued 100,000 options outside of the 2006 Stock Incentive Plan. The options have a ten-year term and vest in the following installments: 33,334 on March 5, 2008, 33,333 on March 5, 2009 and 33,333 on March 5, 2010.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Director Independence

A majority of members of the Board of Directors are “independent” directors, as that term is defined under Section 121A 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.

- ***Audit Committee.*** Each member of the Company’s standing Audit Committee is an “independent” director under Section 121A of the NYSE Amex Company Guide and as that term is used in Rule 10A-3 promulgated under the Securities Exchange Act of 1934, as amended.
- ***Compensation Committee.*** Each member of the Company’s standing Compensation Committee is an “independent” director under Section 121A of the NYSE Amex Company Guide.

- ***Governance and Nominations Committee.*** Each member of the Company's Governance and Nominations Committee is an "independent" director under Section 121A of the NYSE Amex Company Guide.

Transactions with Related Persons

Except as set forth below, there were no disclosable transactions with related persons under Item 404 of Regulation S-K during the fiscal year ended December 31, 2008 or currently proposed.

In March 2009, the Company's executive officers and other key personnel entered into retention bonus agreements to foster the continuous employment of such individuals. Under such agreements, each executive officer will be entitled to receive a lump sum cash bonus equal to six (6) months of the executive's base salary in the event of a change in control, as defined in the Company's 2006 Stock Incentive Plan, occurs and the executive remains continuously employed with the Company (or a successor to the Company, or, if applicable, the ultimate parent of any such successor, collectively referred to as the "Surviving Entity") or any subsidiary thereof through the date occurring three (3) months post-change of control, or such shorter period as deemed necessary by the Surviving Entity (the "Payment Date"), to allow for an orderly transition of personnel and information and to allow for an appropriate integration process, as needed. The amount of the bonus for executive officers, based on base salaries as of December 31, 2008, would be as follows: Dr. Stoll - \$185,000, Dr. Varney - \$181,000, Dr. Tran - \$152,500, Ms. Messinger - \$121,500, Mr. Coleman - \$125,000 and Dr. Johnson - \$110,500. The retention bonus agreements provide that the bonus shall be payable by the Surviving Entity on or as soon as practicable following the Payment Date, but no later than 15 days thereafter, and shall be determined without regard to any reduction of base salary applicable to Company executives subsequent to March 13, 2009 and prior to a change in control. In the event that the executive officer's employment is terminated by the Surviving Entity or a subsidiary thereof after a change in control and prior to the Payment Date, in certain circumstances where the termination is without cause or for good reason, the bonus shall be payable by the Surviving Entity as soon as practicable following the date of termination of the executive officer's employment (but no later than sixty (60) days thereafter), subject to the executive officer executing and not revoking a general release of all claims against the Surviving Entity in a form acceptable to the Surviving Entity within sixty (60) days following such termination of employment.

Review, Approval or Ratification of Transactions with Related Persons

Pursuant to the Company's Audit Committee charter, the Company's executive officers, directors, nominees for directors and principal stockholders, including their immediate family members and affiliates, are prohibited from entering into a related party transaction with the Company without the prior approval of its Audit Committee (or other independent committee of the Board of Directors in cases where it is inappropriate for the Audit Committee to review such transaction due to a conflict of interest). Any request for the Company to enter into a transaction with an executive officer, director, nominee for director, principal stockholder or any of such persons' immediate family members or affiliates must first be presented to the Audit Committee for review, consideration and approval. In approving or rejecting the proposed agreement, the Audit Committee will consider the relevant facts and circumstances available and deemed relevant, including but not limited to, the risks, costs, and benefits to the Company, the terms of the transactions, the availability of other sources for comparable services or products, and, if applicable, the impact on director independence. The Audit Committee shall only approve those agreements that, in light of known circumstances, are in or are not inconsistent with, the Company's best interests, as determined in good faith by the Audit Committee. The Audit Committee will then document its findings and conclusions in writing.

Item 14. Principal Accountant Fees and Services

Audit Fees

The aggregate fees of Haskell & White LLP, the Company's independent registered public accountants, for audit services totaled approximately \$119,000 and \$310,000 for the fiscal years ended December 31, 2008 and 2007, respectively, including fees associated with the reviews of the Company's quarterly reports on Form 10-Q and the annual audit, including procedures related to the Company's assessment of its system of internal controls as of December 31, 2007 as required under Section 404 of the Sarbanes-Oxley Act of 2002.

Audit-Related Fees

The aggregate fees of Haskell & White LLP for audit-related fees totaled approximately \$10,500 and \$51,000, respectively for the fiscal years ended December 31, 2008 and 2007, and included services related to the Company's registration statements filed on Forms S-3 and S-8.

Tax Fees

Fees of Haskell & White LLP for tax services, including tax compliance, tax advice and tax planning totaled approximately \$10,200 and \$9,300 for the fiscal years ended December 31, 2008 and 2007, respectively.

All Other Fees

There were no other fees for services provided by Haskell & White LLP for the fiscal years ended December 31, 2008 or 2007.

All of the services described under headings "Audit Fees," "Audit-Related Fees," "Tax Fees" and "All Other Fees" above were pre-approved by the Audit Committee.

Policy on Audit Committee Pre-Approval of Audit Services and Permissible Non-Audit Services of Independent Registered Public Accountants

The Audit Committee's policy is to pre-approve all audit and permissible non-audit services performed by the independent registered public accountants. These services may include audit services, audit-related services, tax services and other services. For audit services, the independent registered public accountant provides the Audit Committee with an audit plan including proposed fees in advance of the annual audit. The Audit Committee approves the plan and fees for the audit.

For non-audit services, the Company's senior management will submit from time to time to the Audit Committee for approval non-audit services that it recommends the Audit Committee engage the independent registered public accountants to provide during the fiscal year. The Company's senior management and the independent registered public accountants will each confirm to the Audit Committee that each non-audit service is permissible under all applicable legal requirements. A budget, estimating non-audit service spending for the fiscal year, will be provided to the Audit Committee along with the request. The Audit Committee must approve both permissible non-audit services and the budget for such services.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) List of documents filed as part of this report:

(1) Financial Statements

Reference is made to the Index to Financial Statements on page F-1, where these documents are listed.

(2) Financial Statement Schedules

The financial statement schedules have been omitted because the required information is not applicable, or not present in amounts sufficient to require submission of the schedules, or because the information is included in the financial statements or notes thereto.

(3) Exhibits

See (b) below.

(b) Exhibits

Exhibit Number	Description
3.1	Restated Certificate of Incorporation dated April 11, 1989, as amended by Certificate of Amendment on June 27, 1989, by Certificate of Designation filed April 29, 1991, by Certificate of Correction filed May 1, 1991, by Certificate of Amendment of Certificate of Designation filed June 13, 1991, by Certificate of Amendment of Certificate of Incorporation filed November 12, 1992, by Certificate of Amendment of Restated Certificate of Incorporation filed January 11, 1995, by Certificate of Designation filed December 8, 1995, by Certificate of Designation filed October 15, 1996, by Certificate of Designation filed June 4, 1997, by Certificate of Amendment of Restated Certificate of Incorporation filed December 21, 1998, and by Certificate of Designation filed February 11, 2002, incorporated by reference to the same numbered Exhibit of the Company's Amendment No. 1 to Registration Statement on Form 8-A, No.001-16467, filed February 15, 2002, as further amended by Certificate of Amendment of Restated Certificate of Incorporation filed December 15, 2003, incorporated by reference to Exhibit 3.3 to the Company's Quarterly Report on Form 10-Q filed February 12, 2004.
3.2	By-Laws of the Company, as adopted March 4, 1987, and amended on October 8, 1996, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-KSB filed October 15, 1996.
3.4	Certificate of Amendment of Restated Certificate of Incorporation filed March 2, 2006, incorporated by reference to Exhibit 3.4 to the Company's Annual Report on Form 10-K filed March 16, 2006.
3.5	Certificate of Amendment of By-Laws of the Company, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed November 15, 2007.
3.6	Certificate of Amendment of Restated Certificate of Incorporation filed May 15, 2008, incorporated by reference to Exhibit 3.6 to the Company's Report on Form 8-K filed May 19, 2008.
4.1	Rights Agreement, dated as of February 8, 2002, between the Company and American Stock Transfer & Trust Company, which includes as Exhibit A thereto a form of Certificate of Designation for the Series A Junior Participating Preferred Stock, as Exhibit B thereto the Form of Rights Certificate and as Exhibit C thereto a Summary of Terms of Stockholder Rights Plan, incorporated by reference to Exhibit 4.2 to the Company's Amendment No. 1 to Registration Statement on Form 8-A, No. 001-16467, filed February 15, 2002.
4.2	Placement Agency Agreement, dated January 16, 2007, by and between Cortex Pharmaceuticals, Inc. and Roth Capital Partners, LLC, Form of Subscription Agreement and Form of Common Stock Purchase Warrant issued by Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibits 1.1, 1.2 and 4.1, respectively, to the Company's Report on Form 8-K filed January 19, 2007.
4.3	Placement Agency Agreement, dated August 24, 2007, by and between Cortex Pharmaceuticals, Inc. and JMP Securities LLC and Rodman and Renshaw, LLC, Form of Subscription Agreement and Form of Common Stock Purchase Warrant issued by Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibits 1.1, 1.2 and 4.1, respectively, to the Company's Report on Form 8-K filed August 27, 2007.
10.2	Consulting Agreement, dated October 30, 1987, between the Company and Carl W. Cotman, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Registration Statement on Form S-1, No. 33-28284, effective on July 18, 1989.*
10.3	Consulting Agreement, dated as October 30, 1987, between the Company and Gary S. Lynch, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Registration Statement on Form S-1, No. 33-28284, effective on July 18, 1989.*
10.19	License Agreement dated March 27, 1991 between the Company and the Regents of the University of California, incorporated by reference to the same numbered Exhibit to the Company's Amendment on Form 8 filed November 27, 1991 to the Company's Annual Report on Form 10-KSB filed September 30, 1991. (Portions of this Exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 under the Securities Exchange Act of 1934).
10.31	License Agreement dated June 25, 1993, as amended May 28, 2003, between the Company and the Regents of the University of California, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed February 12, 2004. (Portions of this Exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934).

Exhibit Number	Description
10.44	Lease Agreement, dated January 31, 1994, for the Company's facilities in Irvine, California, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-QSB filed May 16, 1994.
10.60	Amended and Restated 1996 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q as filed on November 14, 2002.*
10.64	Research and Collaboration and License Agreement between the Company and N.V. Organon, dated January 13, 1999, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-QSB as filed on February 16, 1999. (Portions of this Exhibit were omitted and filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934.)
10.65	Amendment No. 1 to the Lease Agreement for the Company's facilities in Irvine, California, dated February 1, 1999, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-KSB filed September 28, 1999.
10.67	Collaborative Research, Joint Clinical Research and Licensing Agreements with Les Laboratoires Servier dated October 13, 2000, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-QSB filed November 14, 2000. (Portions of this Exhibit were omitted and filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Act of 1934.)
10.69	Employment agreement dated May 17, 2000, between the Company and James H. Coleman, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-QSB filed February 12, 2001.*
10.70	Severance agreement dated October 26, 2000, between the Company and Maria S. Messinger, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-QSB filed February 12, 2001.*
10.73	Amendment dated October 3, 2002 to the Collaboration Research Agreement with Les Laboratoires Servier dated October 13, 2000, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed October 15, 2002.
10.74	Employment agreement dated October 29, 2002 between the Company and Roger G. Stoll, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q as filed on November 14, 2002.*
10.75	Securities Purchase Agreement dated August 21, 2003, by and among Cortex Pharmaceuticals, Inc. and the investors named therein, including the Registration Rights Agreement attached as Exhibit A thereto and a form of Common Stock Purchase Warrant attached as Exhibit C thereto, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed August 22, 2003.
10.76	First Amendment dated April 8, 2003 to the employment agreement dated October 29, 2002 between the Company and Roger G. Stoll, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed September 19, 2003.*
10.77	Amendment dated December 16, 2003 to the Collaboration Research Agreement with Les Laboratoires Servier dated October 13, 2000, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed February 12, 2004. (Portions of this Exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934).
10.78	Securities Purchase Agreement dated January 7, 2004, by and among Cortex Pharmaceuticals, Inc. and the investors named therein, including the Registration Rights Agreement attached as Exhibit A thereto and a form of Common Stock Purchase Warrant attached as Exhibit C thereto, incorporated by reference to Exhibit 10.75 to the Company's Report on Form 8-K filed January 9, 2004.
10.79	Amendment No. 2 to the Lease Agreement for the Company's facilities in Irvine, California, dated March 9, 2004, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed on September 27, 2004.
10.80	Form of Incentive/Non-qualified Stock Option Agreement under the Company's Amended and Restated 1996 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed on September 27, 2004.*
10.81	Form of Restricted Stock Award Agreement under the Company's Amended and Restated 1996 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed on September 27, 2004.*

Exhibit Number	Description
10.82	Amendment dated January 1, 2004 to the employment agreement dated May 17, 2000 between the Company and James H. Coleman, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed on September 27, 2004.*
10.84	Consulting Agreement dated April 16, 2004 between the Company and Gary D. Tollefson, M.D., Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed on November 15, 2004.*
10.86	Second Amendment dated November 10, 2004 to the employment agreement dated October 29, 2002 between the Company and Roger G. Stoll, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed on November 15, 2004.*
10.87	Securities Purchase Agreement dated December 14, 2004, by and among Cortex Pharmaceuticals, Inc. and the investors named therein, including the Registration Rights Agreement attached as Exhibit A thereto and a form of Common Stock Purchase Warrant attached as Exhibit C thereto, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed December 20, 2004.
10.88	Form of Notice of Grant of Stock Options and Stock Option Agreement under the Company's Amended and Restated 1996 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Transition Report on Form 10-K filed on March 21, 2005.*
10.89	Stock Ownership Policy for the Company's Directors and Executive Officers as adopted by the Board of Directors on December 16, 2004, incorporated by reference to the same numbered Exhibit to the Company's Transition Report on Form 10-K filed on March 21, 2005.*
10.90	Third Amendment dated August 13, 2005 to the employment agreement dated October 29, 2002 between the Company and Roger G. Stoll, Ph.D., incorporated by reference to Exhibit 10.1 to the Company's Report on Form 8-K filed August 17, 2005.*
10.92	Employment letter of agreement dated January 9, 2006 between the Company and Mark Varney, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed March 16, 2006.*
10.93	Non-qualified Stock Option Agreement dated January 30, 2006 between the Company and Mark Varney, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed May 9, 2006.*
10.94	Cortex Pharmaceuticals, Inc. 2006 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed May 11, 2006.*
10.95	Amendment dated May 16, 2006 to the Consulting Agreement dated April 16, 2004 between the Company and Gary D. Tollefson, M.D., Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed May 22, 2006.*
10.96	Form of Notice of Grant of Stock Options and Stock Option Agreement under the Company's 2006 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed August 8, 2006.*
10.97	Form of Incentive/Non-qualified Stock Option Agreement under the Company's 2006 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed August 8, 2006.*
10.98	Amendment No. 3, dated April 1, 2006, to the Lease Agreement for the Company's facilities in Irvine, California, incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed August 8, 2006.
10.100	Negative Equity Agreement dated February 1, 2007 between the Company and Mark A. Varney, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed May 10, 2007.*
10.101	Amendment No. 1 to the Company's 2006 Stock Incentive Plan, incorporated by reference to the same numbered Exhibit to the Company's Current Report on Form 8-K filed May 15, 2007.*
10.102	Amendment to the Exclusive License Agreement between the Company and The Regents of the University of California, dated as of June 1, 2007, incorporated by reference to the same numbered Exhibit to the Company's Current Report on Form 8-K filed June 7, 2007.
10.103	Amendment No. 2 dated April 16, 2007 to the Consulting Agreement dated April 16, 2004 between the Company and Gary D. Tollefson, M.D., Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed August 9, 2007.*

Exhibit Number	Description
10.104	Employment letter of agreement dated September 26, 2007 between the Company and Pierre V. Trân, M.D., M.M.M., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed November 8, 2007.*
10.105	Patent License Agreement between the Company and the University of Alberta, dated as of May 9, 2007, incorporated by reference to the same numbered Exhibit to the Company's Annual Report on Form 10-K filed March 17, 2008. (Portions of this Exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 under the Securities Exchange Act of 1934).
10.106	Amendment No. 3 dated April 17, 2008 to the Consulting Agreement dated April 16, 2004 between the Company and Gary D. Tollefson, M.D., Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed May 8, 2008.*
10.107	Severance Agreement dated May 2, 2008, between the Company and Steven A. Johnson, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Quarterly Report on Form 10-Q filed May 8, 2008.*
10.108	Amendment No. 4, dated June 6, 2008, to the Lease Agreement for the Company's facilities in Irvine, California, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed June 10, 2008.
10.109	Fourth Amendment, dated July 11, 2008, to the employment agreement dated October 29, 2002 between the Company and Roger G. Stoll, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed July 17, 2008.*
10.110	Amendment No. 2 to Employment Agreement, dated as of December 22, 2008, between the Company and James H. Coleman, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed December 23, 2008.*
10.111	Amendment No. 1 to Severance Agreement, dated as of December 22, 2008, between the Company and Maria S. Messinger, incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed December 23, 2008.*
10.112	Employment Agreement, dated as of December 19, 2008, between the Company and Mark A. Varney, Ph.D., incorporated by reference to the same numbered Exhibit to the Company's Report on Form 8-K filed December 31, 2008.*
21	Subsidiaries of the Registrant.
23.1	Consent of Haskell & White LLP, Independent Registered Public Accounting Firm.
24	Power of Attorney (see page S-1).
31.1	Certification by Chief Executive Officer Pursuant to Rule 13a-14(a)/15d-14(a), As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification by Chief Financial Officer Pursuant to Rule 13a-14(a)/15d-14(a), As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32	Certification Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

* Each of these Exhibits constitutes a management contract, compensatory plan, or arrangement.

Signatures

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

CORTEX PHARMACEUTICALS, INC.

Date: April 14, 2009

By: /s/ Mark A. Varney, Ph.D.
Mark A. Varney, Ph.D.
President and Chief Executive Officer

We, the undersigned directors and officers of Cortex Pharmaceuticals, Inc., do hereby constitute and appoint each of Roger G. Stoll, Ph.D., Mark A. Varney, Ph.D. and Maria S. Messinger as our true and lawful attorneys-in-fact and agents with power of substitution, to do any and all acts and things in our name and behalf in our capacities as directors and officers and to execute any and all instruments for us and in our names in the capacities indicated below, which said attorneys-in-fact and agents, or either of them, may deem necessary or advisable to enable said corporation to comply with the Securities and Exchange Act of 1934, as amended, and any rules, regulations and requirements of the Securities and Exchange Commission, in connection with this Annual Report on Form 10-K, including specifically but without limitation, power and authority to sign for us or any of us in our names in the capacities indicated below, any and all amendments (including post-effective amendments) hereto; and we do hereby ratify and confirm all that said attorney-in-fact and agent, shall do or cause to be done by virtue hereof.

In accordance with the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Mark A. Varney, Ph.D.</u> Mark A. Varney, Ph.D. (Principal Executive Officer)	President and Chief Executive Officer	April 14, 2009
<u>/s/ Maria S. Messinger</u> Maria S. Messinger (Principal Financial and Accounting Officer)	Vice President, Chief Financial Officer and Secretary	April 14, 2009
<u>/s/ Robert F. Allnut</u> Robert F. Allnut	Director	April 14, 2009
<u>/s/ John F. Benedik</u> John F. Benedik	Director	April 14, 2009
<u>/s/ Charles J. Casamento</u> Charles J. Casamento	Director	April 14, 2009
<u>/s/ Carl W. Cotman, Ph.D.</u> Carl W. Cotman, Ph.D.	Director	April 14, 2009
<u>/s/ Peter F. Drake, Ph.D.</u> Peter F. Drake, Ph.D.	Director	April 14, 2009
<u>/s/ M. Ross Johnson, Ph.D.</u> M. Ross Johnson, Ph.D.	Director	April 14, 2009
<u>/s/ Roger G. Stoll, Ph.D.</u> Roger G. Stoll, Ph.D.	Director	April 14, 2009

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Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors Cortex Pharmaceuticals, Inc.

We have audited the accompanying balance sheets of Cortex Pharmaceuticals, Inc. as of December 31, 2008 and 2007, and the related statements of operations, stockholders' equity and comprehensive income, and cash flows for each of the years in the three-year period ended December 31, 2008. Cortex Pharmaceuticals, Inc.'s management is responsible for these financial statements. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Cortex Pharmaceuticals, Inc. as of December 31, 2008 and 2007, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2008 in conformity with accounting principles generally accepted in the United States of America.

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 of the financial statements, the Company has suffered recurring losses, negative cash flows from operations and does not currently possess sufficient working capital to fund its operations through next fiscal year. These matters raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

As discussed in Note 9 to the financial statements, in 2007 the Company adopted Financial Accounting Standards Board Interpretation No. 48, Accounting for Uncertainty in Income Taxes — an interpretation of FASB Statement No. 109.

/s/ HASKELL & WHITE LLP

Irvine, California
April 13, 2009

Cortex Pharmaceuticals, Inc.

BALANCE SHEETS

	December 31, 2008	December 31, 2007
Assets		
Current assets:		
Cash and cash equivalents	\$ 1,430,886	\$ 4,020,881
Marketable securities	2,710,434	13,263,560
Other current assets	<u>154,884</u>	<u>246,960</u>
Total current assets	4,296,204	17,531,401
Furniture, equipment and leasehold improvements, net	809,458	850,647
Other	<u>46,667</u>	<u>46,667</u>
	<u>\$ 5,152,329</u>	<u>\$ 18,428,715</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 1,123,015	\$ 970,702
Accrued wages, salaries and related expenses	293,746	398,344
Advance for MCI project	311,723	305,422
Deferred rent	<u>27,123</u>	<u>52,226</u>
Total current liabilities	1,755,607	1,726,694
Other non-current liability	<u>—</u>	<u>25,119</u>
Total liabilities	<u>1,755,607</u>	<u>1,751,813</u>
Commitments and Contingencies (Note 7)		
Stockholders' equity (deficit):		
Series B convertible preferred stock, \$0.001 par value; \$0.6667 per share liquidation preference; shares authorized: 3,200,000; shares issued and outstanding: 37,500; common shares issuable upon conversion: 3,679	21,703	21,703
Common stock, \$0.001 par value; shares authorized: 105,000,000; shares issued and outstanding: 47,615,209 (December 31, 2008) and 47,542,426 (December 31, 2007)	47,615	47,542
Additional paid-in capital	112,686,078	111,339,508
Unrealized (loss) gain, available for sale marketable securities	(3,884)	27,073
Accumulated deficit	<u>(109,354,790)</u>	<u>(94,758,924)</u>
Total stockholders' equity	<u>3,396,722</u>	<u>16,676,902</u>
	<u>\$ 5,152,329</u>	<u>\$ 18,428,715</u>

See accompanying notes.

Cortex Pharmaceuticals, Inc.
STATEMENTS OF OPERATIONS

	Year ended December 31, <u>2008</u>	Year ended December 31, <u>2007</u>	Year ended December 31, <u>2006</u>
Revenues:			
Research and license revenue	\$ —	\$ —	\$ 1,150,608
Grant revenue	<u>—</u>	<u>—</u>	<u>26,851</u>
Total revenues	<u>—</u>	<u>—</u>	<u>1,177,459</u>
Operating expenses (A):			
Research and development	10,780,324	9,327,298	13,261,768
General and administrative	<u>4,258,603</u>	<u>4,319,918</u>	<u>4,616,312</u>
Total operating expenses	<u>15,038,927</u>	<u>13,647,216</u>	<u>17,878,080</u>
Loss from operations	(15,038,927)	(13,647,216)	(16,700,621)
Interest income, net	<u>443,061</u>	<u>678,053</u>	<u>645,820</u>
Net loss applicable to common stock	<u>\$ (14,595,866)</u>	<u>\$ (12,969,163)</u>	<u>\$ (16,054,801)</u>
Net loss per share, basic and diluted	<u>\$ (0.31)</u>	<u>\$ (0.31)</u>	<u>\$ (0.47)</u>
Shares used in basic and diluted calculation	<u>47,571,680</u>	<u>42,133,152</u>	<u>34,348,941</u>
(A) Operating expenses include the following non-cash stock compensation charges:			
Research and development	\$ 721,668	\$ 1,371,351	\$ 1,997,352
General and administrative	<u>577,417</u>	<u>865,831</u>	<u>1,233,898</u>
	<u>\$ 1,299,085</u>	<u>\$ 2,237,182</u>	<u>\$ 3,231,250</u>

See accompanying notes.

Cortex Pharmaceuticals, Inc.

STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME

	Series B convertible preferred stock	Common stock	Additional paid-in capital	Deferred compensation	Accumulated other comprehensive gain (loss)	Accumulated deficit	Total
Balance, December 31, 2005	\$ 21,703	\$ 32,795	\$ 81,000,213	\$ (142,000)	\$ (45,735)	\$ (65,734,960)	\$ 15,132,016
Issuance of 2,146,563 shares of common stock upon exercise of warrants	—	2,147	5,940,170	—	—	—	5,942,317
Issuance of 61,500 shares of common stock upon exercise of stock options	—	61	27,051	—	—	—	27,112
Vesting of stock options issued to consultants and other service providers	—	—	181,186	—	—	—	181,186
Amortization of deferred compensation for issued restricted stock	—	—	—	53,445	—	—	53,445
Forfeiture of 50,000 shares of restricted stock	—	(50)	(88,505)	88,555	—	—	—
Non-cash stock-based employee compensation charges	—	—	2,996,619	—	—	—	2,996,619
Comprehensive loss							
Net loss	—	—	—	—	—	(16,054,801)	(16,054,801)
Unrealized gain on available for sale U.S. Government and other marketable securities	—	—	—	—	42,530	—	42,530
Comprehensive loss	—	—	—	—	42,530	(16,054,801)	(16,012,271)
Balance, December 31, 2006	<u>\$ 21,703</u>	<u>\$ 34,953</u>	<u>\$ 90,056,734</u>	<u>\$ —</u>	<u>\$ (3,205)</u>	<u>\$ (81,789,761)</u>	<u>\$ 8,320,424</u>
Sale of 5,021,427 shares of common stock, \$1.12 per share, net of expenses	—	5,022	5,075,279	—	—	—	5,080,301
Sale of 7,075,000 shares of common stock, \$2.00 per share, net of expenses	—	7,075	13,128,336	—	—	—	13,135,411
Issuance of 333,667 shares of common stock upon exercise of warrants	—	333	612,887	—	—	—	613,220
Issuance of 159,311 shares of common stock upon exercise of stock options	—	159	229,091	—	—	—	229,250
Issuance and vesting of stock options and warrants for consultants and other service providers	—	—	77,039	—	—	—	77,039
Non-cash stock-based employee compensation charges	—	—	2,160,142	—	—	—	2,160,142
Comprehensive loss							
Net loss	—	—	—	—	—	(12,969,163)	(12,969,163)
Unrealized gain on available for sale U.S. Government and other marketable securities	—	—	—	—	30,278	—	30,278
Comprehensive loss	—	—	—	—	30,278	(12,969,163)	(12,938,885)
Balance, December 31, 2007	<u>\$ 21,703</u>	<u>\$ 47,542</u>	<u>\$ 111,339,508</u>	<u>\$ —</u>	<u>\$ 27,073</u>	<u>\$ (94,758,924)</u>	<u>\$ 16,676,902</u>

Continued...

Cortex Pharmaceuticals, Inc.

STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME

(Continued)

	Series B convertible preferred stock	Common stock	Additional paid-in capital	Deferred compensation	Accumulated other comprehensive gain (loss)	Accumulated deficit	Total
Balance, December 31, 2007	\$ 21,703	\$ 47,542	\$ 111,339,508	\$ —	\$ 27,073	\$ (94,758,924)	\$ 16,676,902
Issuance of 22,750 shares of common stock upon exercise of stock options	—	23	8,509	—	—	—	8,532
Issuance of 50,033 shares of common stock to employees in exchange for accrued paid time off	—	50	38,976	—	—	—	39,026
Issuance and vesting of stock options and warrants for consultants and other service providers	—	—	49,619	—	—	—	49,619
Non-cash stock-based employee compensation charges	—	—	1,249,466	—	—	—	1,249,466
Comprehensive loss							
Net loss	—	—	—	—	—	(14,595,866)	(14,595,866)
Unrealized loss on available for sale U.S. Government and other marketable securities	—	—	—	—	(30,957)	—	(30,957)
Comprehensive loss	—	—	—	—	(30,957)	(14,595,866)	(14,626,823)
Balance, December 31, 2008	<u>\$ 21,703</u>	<u>\$ 47,615</u>	<u>\$ 112,686,078</u>	<u>\$ —</u>	<u>\$ (3,884)</u>	<u>\$ (109,354,790)</u>	<u>\$ 3,396,722</u>

See accompanying notes.

Cortex Pharmaceuticals, Inc.
STATEMENTS OF CASH FLOWS

	Year ended December 31, 2008	Year ended December 31, 2007	Year ended December 31, 2006
Cash flows from operating activities:			
Net loss applicable to common stock	\$(14,595,866)	\$(12,969,163)	\$(16,054,801)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	164,890	126,851	110,788
Stock option compensation expense	1,299,085	2,237,182	3,231,250
Changes in operating assets/liabilities:			
Accrued interest on marketable securities	(39,260)	(32,699)	18,961
Accounts receivable	—	160,088	(145,162)
Other current assets	92,076	117,859	(124,284)
Accounts payable and accrued expenses	61,638	(339,679)	(634,198)
Unearned revenue	—	—	(117,779)
Changes in other assets and other liabilities	(28,644)	(42,766)	(8,533)
Net cash used in operating activities	<u>(13,046,081)</u>	<u>(10,742,327)</u>	<u>(13,723,758)</u>
Cash flows from investing activities:			
Purchase of marketable securities	(3,186,104)	(17,059,966)	(9,480,622)
Proceeds from maturities of marketable securities	13,757,359	11,665,800	16,921,665
Purchase of fixed assets	(123,701)	(550,222)	(99,831)
Net cash provided by (used in) investing activities	<u>10,447,554</u>	<u>(5,944,388)</u>	<u>7,341,212</u>
Cash flows from financing activities:			
Proceeds from issuance of common stock in January 2007 registered direct offering, net	—	5,080,301	—
Proceeds from issuance of common stock in August 2007 registered direct offering, net	—	13,135,411	—
Proceeds from issuance of common stock upon exercise of warrants	—	613,220	5,942,317
Proceeds from issuance of common stock upon exercise of stock options	8,532	229,250	27,112
Net cash provided by financing activities	<u>8,532</u>	<u>19,058,182</u>	<u>5,969,429</u>
Increase (decrease) in cash and cash equivalents	(2,589,995)	2,371,467	(413,117)
Cash and cash equivalents, beginning of period	4,020,881	1,649,414	2,062,531
Cash and cash equivalents, end of period	<u>\$ 1,430,886</u>	<u>\$ 4,020,881</u>	<u>\$ 1,649,414</u>

See accompanying notes.

Cortex Pharmaceuticals, Inc.
NOTES TO FINANCIAL STATEMENTS

Note 1 — Business and Summary of Significant Accounting Policies

Business — Cortex Pharmaceuticals, Inc. (the “Company”) was formed to engage in the discovery, development and commercialization of innovative pharmaceuticals for the treatment of neurological and psychiatric disorders. Since its formation in 1987, the Company has been engaged in research and early clinical development activities.

In January 1999, the Company entered into a research collaboration and exclusive worldwide license agreement with NV Organon (“Organon”) that will enable Organon to develop and commercialize the Company’s AMPAKINE[®] technology for the treatment of schizophrenia and depression (Note 5). In October 2000, the Company entered into a research collaboration agreement and an exclusive license agreement with Les Laboratoires Servier (“Servier”) (Note 4). The agreements, as amended to date, will enable Servier to develop and commercialize select AMPAKINE compounds for the treatment of (i) declines in cognitive performance associated with aging, (ii) neurodegenerative diseases, such as Alzheimer’s disease, and (iii) anxiety disorders. In early December 2006, the Company terminated the research collaboration with Servier. The license agreement with Servier, as amended to date, continues in full force and effect in accordance with its terms.

From inception through December 31, 2008, the Company has generated only modest operating revenues, the majority of which it derived from its agreements with Servier and Organon, as further described in Notes 4 and 5, respectively. There were no revenues for the years ended December 31, 2008 and 2007, but these agreements contributed 98% of total revenues for the year ended December 31, 2006.

Under the agreement with Servier, during the year ended December 31, 2006 the Company recorded research and licensing revenues of approximately \$1,151,000 and incurred direct and indirect expenses for the Servier research collaboration totaling approximately \$992,000.

There were no research or license revenues under the Organon agreement for the years ended December 31, 2008, 2007, or 2006. During the same periods the Company incurred no direct or indirect expenses for the Organon research collaboration.

The Company has incurred significant net losses and cash outflows from operations of \$14,596,000 and \$13,046,000, respectively, for the year ended December 31, 2008. The Company expects to incur additional losses and negative cash flow from operations in fiscal 2009 and for several more years. With the net proceeds from the anticipated closing of a registered direct private offering of convertible preferred stock and warrants to purchase shares of common stock in April 2009, as described more fully in Note 11, management believes the Company has adequate financial resources to conduct operations late into the third quarter of 2009. This raises substantial doubt about the Company’s ability to continue as a going concern, which will be dependent on its ability to obtain additional financing and to generate sufficient cash flows to meet its obligations on a timely basis.

In March 2009, as part of its efforts to conserve its existing capital resources, the Company implemented a reduction of approximately 50% of its workforce. The Company also reduced the base salary for each of its executive officers by 20%.

The Company is exploring its strategic and financial alternatives, including new collaborations for its AMPAKINE program which would provide capital to the Company in exchange for exclusive or non-exclusive license or other rights to certain of the technologies and products that the Company is developing. Although the Company is presently engaged in discussions with a number of candidate companies, there can be no assurance that an agreement will arise from these discussions in a timely manner, or at all.

The Company also may need to raise additional capital through the sale of debt or equity and may consider a merger transaction with another pharmaceutical company. The Company believes that without additional investment capital it will not have sufficient cash to fund its activities in the near future, and will not be able to continue operating. As such, the Company's continuation as a going concern is dependent upon its ability to raise additional financing.

If the Company is unable to obtain additional financing to fund operations beyond the third quarter of 2009, it will need to eliminate some or all of its activities, merge with another company, sell some or all of its assets to another company, or cease operations entirely. There can be no assurance that the Company will be able to obtain additional financing on favorable terms or at all, or that the Company will be able to merge with another Company or sell any or all of its assets.

Cash Equivalents — The Company considers all highly liquid short-term investments with maturities of less than three months when acquired to be cash equivalents.

Marketable Securities — The Company adopted Statement of Financial Accounting Standards ("SFAS") No. 157, "Fair Value Measurements," effective January 1, 2008, as required, on a prospective basis. SFAS 157 defines fair value, provides a framework for measuring fair value and expands the disclosures required for fair value measurements. The standard applies to other accounting pronouncements, but does not require any new fair value measurements. Given that the Company previously utilized quoted prices in active markets for identical assets to record the fair value of its marketable securities, and continues to do so under SFAS 157, adopting SFAS 157 did not have a material impact on the Company's financial position or results of operations. SFAS 157 terms quoted prices in active markets for similar assets as Level 1 inputs in its hierarchy of fair value measurements.

Marketable securities are carried at fair value, with unrealized gains and losses, net of any tax, reported as a separate component of stockholders' equity. The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization is included in interest income. Realized gains and losses and declines in value judged to be other-than-temporary on short-term investments are included in interest income. The cost of securities sold is based on the specific identification method. Interest and dividends on securities classified as available-for-sale are included in interest income.

Concentrations of Credit Risk — Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash, cash equivalents and short-term investments. The Company limits its exposure to credit loss by investing its cash with high credit quality financial institutions.

Furniture, Equipment and Leasehold Improvements — Furniture, equipment and leasehold improvements are recorded at cost and depreciated on a straight-line basis over the lesser of their estimated useful lives, ranging from five to ten years, or the life of the lease, as appropriate.

Long-Lived Assets — The Company reviews its long-lived assets for impairment whenever events or changes in circumstances indicate that the total amount of an asset may not be recoverable. An impairment loss is recognized when estimated future cash flows expected to result from the use of the asset and the eventual disposition are less than the asset's carrying amount. The Company did not recognize any significant impairment losses during any of the periods presented.

Revenue Recognition — The Company recognizes revenue when all four of the following criteria are met: (i) persuasive 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.

The Company recognized research revenue from its collaboration with Servier (Note 4) as services were performed under the agreement, which included compensation to the Company based upon an annual rate for each full-time equivalent employee that dedicated research to the project. The agreements provided scheduled quarterly payments to the Company in advance of the period during which the services were to be performed. The Company recorded the resultant revenue from the agreements as it performed the contracted research services.

The Company records grant revenues as the expenses related to the grant projects are incurred. All amounts received under collaborative research agreements or research grants are nonrefundable, regardless of the success of the underlying research. The Company did not have any active grants during the years ended December 31, 2007 or 2008.

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.

If a collaborator develops and markets a product that utilizes the Company's technology, the Company will be eligible to receive royalties based on net sales of the product, as defined by the relative agreement. The Company will recognize such royalties, if any, at the time that the royalties become payable to the Company from the collaborator.

In November 2002, the Emerging Issues Task Force ("EITF") of the FASB reached consensus on Issue 00-21. EITF Issue 00-21 addresses the accounting for arrangements that may involve the delivery or performance of multiple products, services and/or rights to use assets. Specifically, Issue 00-21 requires the recognition of revenue from milestone payments over the remaining minimum period of performance obligations under such multiple element arrangements. As required, the Company applies the principles of Issue 00-21 to multiple element research and licensing agreements that it enters into or modifies after July 1, 2003.

In accordance with the Securities and Exchange Commission's Staff Accounting Bulletin No. 104, "Revenue Recognition" ("SAB 104"), amounts received for upfront technology license fees under multiple-element arrangements are deferred and recognized on a straight-line basis over the period of committed services or performance, which approximates the level of efforts provided, if such arrangements require the Company's on-going services or performance.

Cortex amortized the revenues from Servier's \$5,000,000 nonrefundable upfront fee ratably over the research phase of the agreement, as amended, which began in December 2000 and ended in early December 2006.

Employee Stock Options and Stock-Based Compensation — Effective January 1, 2006, the Company adopted SFAS No. 123(R), "Share Based Payment," using a modified prospective application. SFAS No. 123(R) is a revision of SFAS No. 123, "Accounting for Stock-Based Compensation" and supersedes Accounting Principles Board Opinion No. 25, "Accounting for Stock Issued to Employees" ("APB 25"). SFAS No. 123(R) requires all share-based payments to employees, including grants of employee stock options, to be recognized in the financial statements based on their fair values. During the year ended December 31, 2006, non-cash expenses related to adopting SFAS 123(R) increased the Company's basic and diluted net loss by \$0.09 per share.

For options granted during the years ended December 31, 2008, 2007 and 2006, the fair value of each option award was estimated using the Black-Scholes option pricing model and the following assumptions:

	Year ended December 31,		
	2008	2007	2006
Weighted average risk-free interest rate	3.04%	3.92%	4.75%
Dividend yield	0%	0%	0%
Volatility factor of the expected market price of the Company's common stock	97%	95%	86%
Weighted average life	6.7 years	5.7 years	4.3 years

Expected volatility is based on the historical volatility of the Company's stock. The Company also uses historical data to estimate the expected term of options granted and employee termination rates. The risk-free rate for periods within the contractual life of the options is based on the U.S. Treasury yield curve in effect at the time of grant.

The estimated weighted average fair value of options granted during the years ended December 31, 2008, 2007 and 2006 was \$0.52, \$0.71 and \$1.26, respectively.

As of December 31, 2008, there was approximately \$715,000 of total unrecognized compensation cost related to non-vested share-based employee compensation arrangements. That non-cash cost is expected to be recognized over a weighted-average period of one year.

The Company continues to follow EITF Issue 96-18, "Accounting for Equity Instruments that are Issued to Other than Employees for Acquiring, or in Conjunction with Selling Goods and Services," for stock options and warrants issued to consultants and other non-employees. In accordance with EITF Issue 96-18, these stock options and warrants issued as compensation for services to be provided to the Company 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. The Company recognizes this expense over the period in which the services are provided. The Company's net loss for the years ended December 31, 2008, 2007 and 2006 includes expenses of approximately \$50,000, \$77,000 and \$181,000, respectively, for non-cash stock-based compensation for options issued to consultants and other non-employees.

The Company issues new shares to satisfy stock option and warrant exercises. The total intrinsic value of options exercised during the years ended December 31, 2008, 2007 and 2006 was approximately \$6,700, \$104,900 and \$95,400, respectively. The effect of potentially issuable shares of common stock was not included in the calculation of diluted loss per share given that the effect would be anti-dilutive.

Research and Development Costs — All costs related to research and development activities are treated as expenses in the period incurred.

Comprehensive Income — In accordance with Statement of Financial Accounting Standards No. 130, "Reporting Comprehensive Income," all components of comprehensive loss, including net loss, are reported in the financial statements in the period in which they are recognized. Comprehensive loss is defined as the change in equity during a period from transactions and other events and circumstances from non-owner sources. Net loss and other comprehensive loss, including unrealized gains and losses on investments, are reported net of any related tax effect to arrive at comprehensive loss.

Net Loss per Share — In accordance with Statement of Financial Accounting Standard No. 128, "Earnings per Share" ("SFAS 128"), net loss per share is computed based on the weighted average number of common shares outstanding.

As of December 31, 2008, the Company has reserved approximately 23.5 million shares of common stock for issuance upon exercise of outstanding stock options and stock purchase warrants, as well as for conversion of the Company's Series B preferred stock, as further described in Note 3. The effect of the potentially issuable shares of common stock was not included in the calculation of diluted loss per share given that the effect would be anti-dilutive.

Use of Estimates — The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual amounts may differ from those estimates.

Note 2 — Detail of Selected Balance Sheet Accounts

As indicated in Note 1, the Company adopted SFAS 157 effective as of January 1, 2008, on a prospective basis. Given that the Company previously utilized quoted prices in active markets for identical assets to record

the fair value of its marketable securities, and continues to do so under SFAS 157, adopting SFAS 157 did not have a material impact on the Company's financial position or results of operations. The following is a summary of marketable securities as of December 31, 2008:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Corporate obligations	\$ 1,202,511	\$ 1,195	\$ (3,960)	\$ 1,199,746
Mortgage backed government securities	748,046	1,994	(157)	749,883
Other asset backed securities	514,357	—	(2,967)	511,390
Commercial paper	249,404	11	—	249,415
Total marketable securities	\$ 2,714,318	\$ 3,200	\$ (7,084)	\$ 2,710,434

The amortized cost and estimated fair value of available-for-sale marketable securities as of December 31, 2008, by contractual maturity, are as follows:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Maturities				
Within one year	\$ 2,199,961	\$ 3,200	\$ (4,117)	\$ 2,199,044
After one year through five years	514,357	—	(2,967)	511,390
Total marketable securities	\$ 2,714,318	\$ 3,200	\$ (7,084)	\$ 2,710,434

The following is a summary of marketable securities as of December 31, 2007:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Corporate obligations	\$ 4,646,268	\$ 6,855	\$ (3,731)	\$ 4,649,392
Mortgage backed government securities	1,493,585	3,295	—	1,496,880
Certificates of deposit	372,929	2,113	—	375,042
Other asset backed securities	6,723,705	18,735	(194)	6,742,246
Total marketable securities	\$ 13,236,487	\$ 30,998	\$ (3,925)	\$ 13,263,560

The amortized cost and estimated fair value of available-for-sale marketable securities as of December 31, 2007, by contractual maturity, are as follows:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Maturities				
Within one year	\$ 4,877,876	\$ 8,607	\$ (1,139)	\$ 4,885,344
After one year through five years	8,358,611	22,391	(2,786)	8,378,216
Total marketable securities	\$ 13,236,487	\$ 30,998	\$ (3,925)	\$ 13,263,560

Gross realized gains and losses on sales of marketable securities were not significant in the years ended December 31, 2008, 2007 and 2006. The Company manages risk on its investment portfolio by matching scheduled investment maturities with its cash requirements.

Furniture, equipment and leasehold improvements consist of the following:

	December 31,	
	2008	2007
Laboratory equipment	\$ 2,247,215	\$ 2,145,014
Leasehold improvements	773,871	768,046
Furniture and equipment	183,549	184,515
Computers and software	<u>418,858</u>	<u>402,217</u>
	3,623,493	3,499,792
Accumulated depreciation	<u>(2,814,035)</u>	<u>(2,649,145)</u>
	<u>\$ 809,458</u>	<u>\$ 850,647</u>

Note 3 — Stockholders' Equity

Preferred Stock

The Company has authorized a total of 5,000,000 shares of preferred stock, par value \$0.001 per share, of which, as of December 31, 2008, 1,250,000 shares have been designated as 9% Cumulative Convertible Preferred Stock (non-voting, "9% Preferred"); 3,200,000 shares have been designated as Series B Convertible Preferred Stock (non-voting, "Series B Preferred"); 500 shares have been designated as Series D Convertible Preferred Stock (non-voting, "Series D Preferred"); 35,000 have been designated as Series A Junior Participating Preferred Stock (non-voting, "Series A Junior Participating") and 514,500 shares were undesignated and may be issued with such rights and powers as the Board of Directors may designate. In April 2009, the Company designated 1,475 shares as 0% Series E Convertible Preferred Stock (non-voting, "0% Preferred"). See Note 11.

Series B Preferred outstanding as of December 31, 2008 and 2007 consisted of 37,500 shares issued in a May 1991 private placement. Each share of Series B Preferred is convertible into approximately 0.09812 shares of common stock at an effective conversion price of \$6.795 per share of common stock, subject to adjustment under certain circumstances. As of December 31, 2008, the remaining shares of Series B Preferred outstanding are convertible into 3,679 shares of common stock. The Company may redeem the Series B Preferred at a price of \$0.6667 per share, an amount equal to its liquidation preference, at any time upon 30 days' prior notice.

Common Stock and Common Stock Purchase Warrants

On August 21, 2003, the Company issued 3,333,334 shares of common stock to accredited investors in a private placement transaction for \$1.50 per share, providing gross proceeds of \$5,000,000. Net proceeds from the transaction, after issuance costs and placement fees, were approximately \$4,500,000. In connection with the transaction, the Company also issued five-year warrants to the investors to purchase up to an additional 3,333,334 shares of the Company's common stock at an exercise price of \$2.55 per share. From their issuance date through the year ended December 31, 2007, warrants to purchase 1,516,666 common shares were exercised, producing proceeds of approximately \$3,867,000. Of this total, during the year ended December 31, 2007 warrants to purchase 66,667 common shares were exercised, contributing proceeds of approximately \$170,000. As of December 31, 2007, related warrants to purchase 1,816,668 shares of common stock remained outstanding. These remaining warrants expired unexercised in August 2008.

In connection with the August 2003 private placement, the Company also issued warrants to two placement agents to purchase 30,000 and 83,061 shares of the Company's common stock, respectively. The warrant to purchase 30,000 shares of the Company's common stock has an exercise price of \$1.50 per share and a five-year term. The warrant to purchase 83,061 shares of the Company's common stock has an exercise price of \$2.71 per share and a three-year term. Of the warrants issued to the placement agents, from their issuance date

through December 31, 2007, warrants to purchase 112,061 shares of common stock were exercised, contributing proceeds of approximately \$269,000. There were no exercises during the years ended December 31, 2007 or 2008. As of December 31, 2007, of the warrants issued to the placement agents, warrants to purchase 1,000 shares of common stock remained outstanding. These warrants expired unexercised in August 2008.

On January 7, 2004, the Company issued 6,909,091 shares of common stock to accredited investors in a private placement transaction for \$2.75 per share, resulting in gross proceeds of \$19,000,000. Net proceeds from the transaction, after issuance costs and placement fees, were approximately \$17,500,000. In connection with the January 2004 transaction, the Company issued five-year warrants to the investors to purchase up to 4,490,910 shares of the Company's common stock at an exercise price of \$3.25 per share. The Company also issued two additional warrants to purchase 54,750 and 272,959 shares of the Company's common stock, respectively, to two placement agents. The warrant to purchase 54,750 shares of the Company's common stock has an exercise price of \$2.75 per share and a five-year term. The warrant to purchase 272,959 shares of the Company's common stock has an exercise price of \$3.48 per share and a three-year term. Of the warrants issued to investors in the private placement, from their issuance date through December 31, 2008, warrants to purchase 521,773 shares of common stock were exercised, contributing proceeds of approximately \$1,696,000. Of the warrants issued to the placement agents in the transaction, from their issuance date through December 31, 2008, warrants to purchase 50,750 shares of common stock were exercised, contributing proceeds of approximately \$140,000, and warrants to purchase 272,959 shares of common stock expired unexercised. There were no exercises during the years ended December 31, 2007 or 2008. As of December 31, 2008, warrants issued to investors to purchase 3,969,137 shares of common stock and warrants issued to placement agents to purchase 4,000 shares of common stock remained outstanding. All of these remaining warrants expired unexercised in January 2009.

On December 14, 2004, the Company issued 4,233,333 shares of common stock to accredited investors in a private placement transaction for \$2.66 per share, resulting in gross proceeds of \$11,260,663. Net proceeds from the transaction, after issuance costs and placement fees, were approximately \$10,400,000. In connection with the December 2004 transaction, the Company issued five-year warrants to the investors to purchase up to 2,116,666 shares of the Company's common stock at an exercise price of \$3.00 per share. The Company also issued three-year warrants to purchase 164,289 shares of the Company's common stock at an exercise price of \$3.43 per share to the placement agent for the transaction. From their issuance date through December 31, 2008, of the warrants issued to the investors, warrants to purchase 340,977 shares of common stock were exercised, resulting in proceeds of approximately \$1,023,000. There were no exercises during the years ended December 31, 2007 or 2008. The warrants issued to the placement agent expired unexercised. As of December 31, 2008, warrants issued to the investors to purchase 1,775,689 shares of common stock remained outstanding. If the remaining warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$5,327,000 of additional capital. All of the warrants issued in the December 2004 transaction provide a call right in favor to the Company to the extent that the price per share of the Company's common stock exceeds \$7.50 per share for 13 consecutive trading days, subject to certain circumstances.

Pursuant to the terms of the registration rights agreements entered into in connection with each of the above transactions, within defined timelines the Company was required to file, and did file, with the Securities and Exchange Commission (the "SEC") a registration statement under the Securities Act of 1933, as amended, covering the resale of all of the common stock purchased and the common stock underlying the issued warrants, including the common stock underlying the placement agents' warrants.

The registration rights agreement for each transaction further provides that if a registration statement is not filed or does not become effective within the defined time period, then in addition to any other rights the holders may have, the Company would be required to pay each holder an amount in cash, as liquidated damages, equal to 2% per month of the aggregate purchase price paid by such holder in the private placements for the common stock and warrants then held, prorated daily.

The registration statement for each transaction was filed and declared effective by the SEC within the allowed timeframe. As a result, the Company was not required to pay any liquidated damages in connection with the initial registration for any transaction.

In accordance with EITF 00-19, "Accounting for Derivative Financial Instruments Indexed To, and Potentially Settled In a Company's Own Stock," ("EITF 00-19") and the terms of the warrants and the transaction documents, at the closing date for each transaction, the fair value of the warrants was recorded as a liability, with an offsetting reduction to additional paid-in capital received from the private placement.

The fair value of the warrants was estimated using the Black-Scholes option pricing model and was re-measured at the date of effectiveness of the registration statement. The increase, if any, in fair value of the warrants from the closing date of the transaction to the effective date of the registration statement was recorded as a charge to other expense in the Statement of Operations for the relative period. The warrant liability was reclassified to additional paid-in capital as of the date of effectiveness of the registration statement.

For each private placement transaction, the Company amortized related offering costs until the respective registration statements were declared effective by the SEC. This amortization was recorded as other expense in the Statement of Operations. Once the registration statements were declared effective, the Company reclassified any unamortized capitalized financing costs to additional paid-in capital.

As stated above, the accounting required by EITF 00-19 was triggered by the terms of the Company's agreements for the private placements it completed in August 2003, January 2004 and December 2004, specifically the potential penalties if the Company did not timely register the common stock underlying the warrants issued in each transaction. The related registration statements were declared effective by the SEC within the contractual deadlines and the Company incurred no penalties. The application of EITF 00-19 had no impact on the Company's working capital, liquidity, or business operations.

In December 2006, the FASB issued FASB Staff Position ("FSP") EITF No. 00-19-2, "Accounting for Registration Payment Arrangements." This FSP specifies that companies that enter into agreements to register securities will be required to recognize a liability if a payment to investors for failing to fulfill the agreement is probable and can be reasonably estimated. This accounting differs from the guidance in EITF 00-19, which required a liability to be recognized and measured at fair value, regardless of probability.

EITF No. 00-19-2 is effective immediately for registration payment arrangements and the financial instruments subject to those arrangements that are entered into or modified after the date of issuance of this FSP. For the Company's registration payment arrangements and financial instruments subject to those arrangements that were entered into prior to the issuance of this FSP, the guidance was effective beginning January 1, 2007.

Transition to EITF 00-19-2 was to be achieved by reporting a change in accounting principle through a cumulative-effect adjustment to the opening balance of retained earnings. For purposes of measuring the cumulative-effect adjustment related to the recognition of a contingent liability, the Company evaluated whether the transfer of consideration under its registration payment arrangements was probable and could be reasonably estimated as of the January 1, 2007 adoption date. Given that the Company did not deem the transfer of consideration under its existing registration payments arrangements as probable as of January 1, 2007, the Company did not record a cumulative-effect adjustment in connection with the adoption of this FSP.

In connection with the obligation to maintain effectiveness of the registration statements filed with each of the above transactions, the Company has estimated the maximum potential amount of undiscounted payments that it could be required to make under the registration arrangements as approximately \$1,814,000. Given that the Company did not deem the transfer of consideration under its existing registration payment arrangements as probable as of December 31, 2007 or 2008, no related expense or liability has been recorded during the years ended December 31, 2007 or 2008.

On January 22, 2007, the Company completed a registered direct offering with several institutional investors for shares of its common stock and warrants to purchase common stock for an aggregate purchase price of

approximately \$5,624,000. Net proceeds from the offering were approximately \$5,080,000. Under the terms of the transaction, the Company sold an aggregate of 5,021,427 shares of its common stock and warrants to purchase 3,263,927 shares of its common stock. The warrants have an exercise price of \$1.66 per share and are exercisable on or before January 21, 2012. The warrants are subject to a call provision in favor of the Company to the extent that the closing price of the Company's common stock exceeds \$3.35 for any 13 consecutive trading-day period.

During the year ended December 31, 2007, the Company received approximately \$443,000 from the exercise of related warrants. No warrants were exercised during the year ended December 31, 2008. If the remaining 2,996,927 warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$4,975,000 of additional capital.

On August 29, 2007, the Company completed a registered direct offering with several institutional investors for shares of its common stock and warrants to purchase common stock for an aggregate purchase price of \$14,150,000. Net proceeds from the offering were approximately \$13,135,000. Under the terms of the transaction, the Company sold an aggregate of 7,075,000 shares of its common stock and warrants to purchase 2,830,000 shares of its common stock to the investors. The investors' warrants have an exercise price of \$2.64 per share and are exercisable on or before August 28, 2012. In addition, the Company issued warrants to purchase up to an aggregate of 176,875 shares of its common stock to the placement agents in the offering. The placement agents' warrants have an exercise price of \$3.96 per share and are exercisable on or before August 28, 2012. If the investor and placement agent warrants are fully exercised, of which there can be no assurance, these warrants would provide approximately \$8,172,000 of additional capital.

Given the terms of the related agreements for the January 2007 and August 2007 registered direct offerings, including the registration of the issued shares and shares underlying the issued warrants on the Company's Form S-3 No. 333-138844 filed on November 20, 2006 and declared effective by the SEC on November 30, 2006 (before the completion of the transactions), the securities issued in these offerings were not subject to the requirements of EITF 00-19 or EITF 00-19-2.

In connection with the engagement of a consultant for investor relations purposes, from February 2003 through December 2004, the Company issued five-year warrants to purchase up to an aggregate of 188,000 shares of its common stock at a weighted-average exercise price of \$1.59 per share. During the year ended December 31, 2005, the Company issued warrants to purchase another 8,000 shares of its common stock at a weighted-average exercise price of \$2.77 per share. The applicable exercise prices for these warrants were derived from the market value of the Company's common stock on the date of issuance and the warrants were fully exercisable when issued. During the year ended December 31, 2008, in exchange for ongoing services, the exercisability of previously issued warrants to purchase 42,000 shares of common stock was extended to early September 2010. In connection with the term extensions, during the year ended December 31, 2008 the Company recorded non-cash stock compensation charges of approximately \$7,000. As of December 31, 2008, warrants to purchase a total of 68,000 shares of the Company's common stock remained outstanding at a weighted average exercise price of \$2.79 per share. The expiration dates for the outstanding warrants, as amended, range from early January 2009 to early September 2010.

In connection with business development activities, in July 2005 the Company issued a five-year warrant to purchase 100,000 shares of its common stock at an exercise price of \$2.75 per share. The warrant is subject to certain conditions in order to become exercisable, which conditions remain unmet as of December 31, 2008.

In connection with an employment agreement with an executive officer, in August 2004 the Company issued 100,000 restricted shares of its common stock ("Restricted Shares"). The Restricted Shares were scheduled to vest in equal installments over a four-year period from the date of issuance and were subject to forfeiture in the event that employment of the executive officer terminated before the applicable vesting dates. The fair market value of the Restricted Shares as of the issuance date, or \$213,000, was recorded as deferred compensation and related expense was amortized over the vesting period. When the executive officer resigned from the Company during the year ended December 31, 2006, 50,000 Restricted Shares had vested and 50,000 Restricted Shares were forfeited. In connection with the resignation, in December 2006 the unamortized balance of deferred compensation of approximately \$89,000 was reclassified into additional paid-in capital. No additional Restricted Shares were granted during the years ended December 31, 2007 or 2008.

As of December 31, 2008, the Company had reserved an aggregate of 3,679 shares for issuance upon conversion of the Series B Preferred; 11,920,628 shares for issuance upon exercise of warrants; 11,554,319 shares for issuance upon exercise of outstanding stock options; and 112,386 shares for issuance upon exercise of stock options available for future grant.

Warrant transactions by the Company for the years ended December 31, 2006, 2007 and 2008 are summarized below:

	Number of underlying shares	Weighted average exercise price per share
Outstanding as of December 31, 2005	10,457,972	\$ 2.97
Issued	—	—
Exercised	(2,146,563)	2.77
Expired	—	—
Outstanding as of December 31, 2006	<u>8,311,409</u>	\$ 3.02
Issued	6,270,802	2.17
Exercised	(333,667)	1.84
Expired	<u>(437,248)</u>	3.46
Outstanding as of December 31, 2007	13,811,296	\$ 2.65
Issued	—	—
Exercised	—	—
Expired	<u>(1,890,668)</u>	2.50
Outstanding as of December 31, 2008	<u><u>11,920,628</u></u>	\$ 2.67

Information regarding warrants outstanding at December 31, 2008 is as follows:

Range of exercise prices	Number outstanding and exercisable at December 31, 2007	Weighted average remaining contractual life	Weighted average exercise price
\$ 1.65 - 2.17	3,004,927	3.1 years	\$ 1.66
2.27 - 3.25	8,725,826	1.4 years	2.99
3.45 - 4.29	<u>189,875</u>	3.5 years	3.95
	<u><u>11,920,628</u></u>		

Stock Option and Stock Purchase Plan

The Company's 1996 Stock Incentive Plan (the "1996 Plan"), which terminated pursuant to its terms on October 25, 2006, provided for the granting of options and rights to purchase up to an aggregate of 10,213,474 shares of the Company's authorized but unissued common stock to qualified employees, officers, directors, consultants and other service providers. Options previously granted under the 1996 Plan generally vest over a three-year period, although some options granted to officers included more accelerated vesting. Options previously granted under the 1996 Plan generally expire ten years from the date of grant, but some options granted to consultants expire five years from the date of grant.

On March 30, 2006, the Company's Board of Directors approved the 2006 Stock Incentive Plan (the "2006 Plan"), which subsequently was approved by the Company's stockholders on May 10, 2006. Since the approval of the 2006 Plan, no further options have been or will be granted under the 1996 Plan. The 2006 Plan provides for the granting of options and rights to purchase up to an aggregate of 4,363,799 shares of the Company's authorized but unissued common stock (subject to adjustment under certain circumstances, such as stock splits, recapitalizations and reorganization) to qualified employees, officers, directors, consultants and other service providers.

Under the 2006 Plan, the Company may issue a variety of equity vehicles to provide flexibility in implementing equity awards, including incentive stock options, nonqualified stock options, restricted stock grants, stock appreciation rights, stock payment awards, restricted stock units and dividend equivalents. The exercise price of stock options offered under the 2006 Plan must be at least 100% of the fair market value of the common stock on the date of grant. If the person to whom an incentive stock option is granted is a 10% stockholder of the Company on the date of grant, the exercise price per share shall not be less than 110% of the fair market value on the date of grant. Vesting and expiration provisions for options granted under the 2006 Plan are similar to those under the 1996 Plan.

Subject to any restrictions under federal or securities laws, the Chief Executive Officer may award stock options to new non executive-officer employees and consultants, with a market value at the time of hire equivalent to up to one time the employee's annual salary or consultant's anticipated consulting fees. The Chief Executive Officer shall have the discretion to increase or decrease such awards based on market and recruiting factors subject to a limit per person of options to purchase 50,000 shares. Additionally, on an annual basis, the Chief Executive Officer may grant continuing employees and consultants, based upon performance and objectives, a stock option for that number of shares up to 40% of the employee's annual salary or the consultant's fees, but not to exceed 50,000 shares per person per year. Any option grant exceeding 50,000 shares per person per year requires approval by the Compensation Committee of the Board of Directors. These options shall be granted with an exercise price equal to the fair market value of the Company's common stock on the date of issuance, have a ten-year term, vest annually over a three-year period from the dates of grant and have other terms consistent with the 2006 Plan.

Each non-employee director (other than those who serve on the Board of Directors to oversee an investment in the Company) is automatically granted options to purchase 30,000 shares of common stock upon commencement of service as a director and, prior to 2006, each non-employee director also was automatically granted additional options to purchase 25,000 shares of common stock on the date of the Annual Meeting of Stockholders. However, due to a change in the Company's fiscal year from June 30 to December 31 and the timing of the Annual Meeting of Stockholders, these automatic grants were made at the Annual Meeting of Stockholders in December 2005, but not at the Annual Meeting of Stockholders in May 2006. There were no option grants to the non-employee directors during 2006. During the year ended December 31, 2007, the date for the automatic annual grant of options to purchase 25,000 shares of common stock was changed to the date of the first meeting of the Board of Directors for the relative calendar year. Stock option issuances to non-employee directors who serve on the Board of Directors to oversee an investment in the Company are determined separately. Subsequent to December 31, 2007, the annual automatic grant to non-employee directors was increased to options to purchase 30,000 shares of common stock. The nonqualified options to non-employee directors have an exercise price equal to 100% of the fair market value of the common stock on the date of grant, have a ten-year term and vest in equal increments of 33% on the anniversary dates of the dates of grant.

As of December 31, 2008, options to purchase an aggregate of 8,466,995 shares of common stock were exercisable under the Company's stock option plans. During the years ended December 31, 2008, 2007 and 2006, the Company did not issue options to purchase shares of common stock with exercise prices below the fair market value of the common stock on the dates of grant.

Stock option transactions under the Company's stock option plans for the years ended December 31, 2006, 2007 and 2008 are summarized below:

	Shares	Weighted Average Per Share Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Balance, December 31, 2005	7,544,721	\$ 2.05		
Granted	2,532,267	1.98		
Exercised	(61,500)	0.44		
Expired	(5,000)	0.38		
Forfeited	<u>(243,332)</u>	2.26		
Balance, December 31, 2006	9,767,156	\$ 2.04		
Granted	1,237,130	0.97		
Exercised	(159,311)	1.44		
Expired	(484,814)	1.99		
Forfeited	<u>(218,665)</u>	2.03		
Balance, December 31, 2007	10,141,496	\$ 1.92		
Granted	1,817,000	0.64		
Exercised	(22,750)	0.38		
Expired	(236,428)	2.05		
Forfeited	<u>(144,999)</u>	1.23		
Balance, December 31, 2008	<u>11,554,319</u>	\$ 1.73	6.3 years	\$55,649
Exercisable, December 31, 2008	<u>8,466,995</u>	\$ 2.01	5.4 years	\$17,639

As of December 31, 2008, options available for future grant under the 2006 Stock Incentive Plan amounted to 112,386.

Information regarding stock options outstanding at December 31, 2008 is as follows:

Range of exercise prices	Options Outstanding			Options Exercisable		
	Number outstanding at December 31, 2008	Weighted average remaining contractual life	Weighted average exercise price	Number exercisable at December 31, 2008	Weighted average exercise price	
\$0.50 - \$0.75	2,960,627	6.9 years	\$ 0.62	1,304,043	\$ 0.67	
0.76 - 1.12	1,647,542	6.0 years	0.90	952,547	0.85	
1.13 - 1.68	1,421,775	8.0 years	1.33	909,446	1.31	
1.69 - 2.42	1,519,274	6.1 years	2.29	1,514,274	2.29	
2.43 - 3.38	3,975,152	5.4 years	2.81	3,756,736	2.81	
3.39 - 4.44	29,949	3.3 years	4.34	29,949	4.34	
	<u>11,554,319</u>	6.3 years	1.73	<u>8,466,995</u>	2.01	

Stockholder Rights Plan

On February 5, 2002, the Company's Board of Directors approved the adoption of a Stockholder Rights Plan to protect stockholder interests against takeover strategies that may not provide maximum stockholder value. A dividend of one Right for each outstanding share of the Company's common stock was distributed to

stockholders of record on February 15, 2002. Each share of common stock presently outstanding and issued since February 15, 2002 also includes one Right. Each share of common stock that may be issued after the date hereof but prior to the Distribution Date (as defined below) will also include one Right. The Rights automatically attach to outstanding shares of common stock detailed above and no separate certificates are issued. The Rights trade only together with the Company's common stock.

Each Right allows its holder to purchase one one-thousandth of a share (a "Unit") of Series A Junior Participating Preferred Stock at a purchase price of \$75.00 per Unit. The Rights are not currently exercisable, but will become exercisable on the 10th business day following the occurrence of certain events relating to a person or group ("Acquiring Person") acquiring or attempting to acquire fifteen percent (15%) or more of the outstanding shares of the Company's common stock (the "Distribution Date"). If the Rights become exercisable, then any Rights held by the Acquiring Person are void. In such event, each other holder of a Right that has not been exercised will have the right upon exercise to purchase shares of the Company's common stock (or common stock of the Acquiring Person in certain situations) having a value equal to two times the exercise price of the Right. Unless redeemed or exchanged earlier by the Company, the Rights expire on February 15, 2012.

The Company has 35,000 shares of Series A Junior Participating Preferred Stock authorized (35,000,000 Units), of which no shares or Units are issued or outstanding at December 31, 2008. Each Unit would entitle the holder to (A) one vote, voting together with the shares of common stock; (B) in the event that the Company's assets are liquidated, a payment of \$1.00 or an amount equal to the payment to be distributed per share of common stock, whichever is greater; and (C) in the event of any merger, consolidation or other transaction in which shares of common stock are exchanged, a payment in the amount equal to the payment received per share of common stock. The number of Rights per share of common stock, and the purchase price, are subject to adjustment in the event of each and any stock split, stock dividend or similar event.

Note 4 — Research and License Agreement with Les Laboratoires Servier

In October 2000, the Company entered into a research collaboration agreement and an exclusive license agreement with Les Laboratoires Servier. The agreements will allow Servier to develop and commercialize select AMPAKINE compounds for the treatment of (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. In early December 2006, the Company terminated the research collaboration with Servier. However, the exclusive license agreement with Servier, as amended to date, will continue in full force and effect in accordance with its terms for the three compounds selected by Servier at termination. The territory covered by the exclusive license excludes North America, allowing Cortex to retain commercialization rights in its domestic market. The territory covered by the exclusive license agreement also excludes South America (except Argentina, Brazil and Venezuela), Australia and New Zealand. Cortex, as a result of the termination, recovered worldwide marketing rights for all of the indications originally licensed to Servier, other than three compounds retained by Servier for commercialization.

In connection with the agreements, Servier paid Cortex a nonrefundable, up-front payment of \$5,000,000. The upfront payment was amortized as revenue over the research support period, as extended by the amendments entered into in October 2002 and December 2003. The October 2000 agreements included research support through early December 2006, subject to Cortex providing agreed-upon levels of research. The amount of support was subject to annual adjustment based upon the increase in the U.S. Department of Labor's Consumer Price Index. During the year ended December 31, 2006, the Company recorded research support from Servier of approximately \$1,025,000. The agreements also include milestone payments based upon clinical development and royalty payments on sales in licensed territories.

In October 2002, Servier agreed to provide Cortex with \$4,000,000 of additional research support, in exchange for rights to the Company's AMPAKINE compounds for the potential treatment of anxiety disorders, in Servier's licensed territories. The \$4,000,000 was received in quarterly installments of \$500,000 over a two-year period, with the final payment received during the quarter ended September 30, 2004.

Note 5 — Research and License Agreement with NV Organon

In January 1999, the Company entered into a research collaboration and exclusive worldwide license agreement with NV Organon. The agreement will enable Organon to develop and commercialize the Company's proprietary AMPAKINE technology for the treatment of schizophrenia and depression.

In connection with the Organon agreement, the Company received an up-front payment of \$2,000,000. The agreement also included support of approximately \$3,000,000 per year for the period from January 1999 through January 2001, during which time the Company provided research services to Organon.

During the fiscal year ended June 30, 2000, the Company received its first milestone under the agreement, triggered when Organon selected an AMPAKINE compound to pursue in Phase I clinical testing as a potential treatment for schizophrenia. During the fiscal year ended June 30, 2002, Organon notified Cortex of its intent to continue developing the selected compound by entering Phase II clinical testing, triggering a second milestone payment of \$2,000,000, which the Company received in September 2001. During the fiscal year ended June 30, 2004, Organon paid Cortex another \$2,000,000 milestone in order to retain its rights to Cortex's AMPAKINE technology in the field of depression. Cortex remains eligible for additional milestone payments based upon further clinical development of the licensed technology by Organon, and ultimately, royalties on worldwide product sales, if any. Unless terminated earlier, the agreement continues until the expiration of all of Organon's royalty obligations, which continue until the expiration of patents covering the AMPAKINE technology or compounds licensed under the agreement.

In November 2007, Organon was acquired by Schering-Plough Corporation. Subsequently, in March 2009, Merck & Co. Inc. entered into a definitive merger agreement with Schering-Plough.

Note 6 — Advance from the Institute for the Study of Aging

In June 2000, the Company received \$247,300 from the Institute for the Study of Aging (the "Institute") to fund testing of the Company's AMPAKINE CX516 in patients with mild cognitive impairment ("MCI"). Patients with MCI represent the earliest clinically-defined group with memory impairment beyond that expected for normal individuals of the same age and education, but such patients do not meet the clinical criteria for Alzheimer's disease. The Institute is a non-profit foundation based in New York City and dedicated to the improvement in quality of life for the elderly.

Provided that Cortex complies with the conditions of the funding agreement, repayment of the advance shall be forgiven unless Cortex enters one of its AMPAKINE compounds into Phase III clinical trials for Alzheimer's disease. Upon such potential clinical trials, repayment would include the principal amount plus accrued 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 outstanding principal balance and any accrued interest thereon as shares of Cortex common stock. The conversion price for such form of repayment shall initially equal \$4.50 per share, subject to adjustment under certain circumstances. Included in the balance sheet is accrued principal and interest of approximately \$311,723 and \$305,422 at December 31, 2008 and 2007, respectively.

Note 7 — Commitments

The Company leases its offices and research laboratories under an operating lease that expires May 31, 2012. The related lease agreement includes scheduled rent increases that are recorded on a straight-line basis over the lease term. Subject to certain conditions, the lease provides the Company an option to extend the term of the lease for three one-year periods at the prevailing market rental rate at the time any extension is set to commence. Rent expense under this lease for the years ended December 31, 2008, 2007 and 2006 was approximately \$500,000, \$511,000 and \$516,000, respectively. Commitments under the lease for the years ending December 31, 2009, 2010, 2011 and the five months ending May 31, 2012 are approximately \$552,000, \$556,000, \$581,000 and \$238,000, respectively.

As of December 31, 2008, the Company has employment agreements with three of its executive officers that involve annual salary payments approximating \$982,000 and provide for bonuses under certain circumstances. The agreements expire in May 2009, August 2009 and August 2011.

The Company has entered into severance agreements with each of its executive officers. In the event of a termination of employment, under certain circumstances, these severance agreements provide defined benefits to the executive officers, including compensation equal to 12 months of the executive officer's then current salary.

Commitments for preclinical and clinical studies amount to approximately \$2,028,000. Separately, commitments under sponsored research agreements for services to be rendered approximated \$306,000, all of which is payable within the next twelve months.

The Company has entered agreements with an academic institution that provide the Company exclusive rights to certain of the technologies that the Company is developing. Under the terms of the agreements, the Company is committed to royalty payments. These payments include minimum annual royalties of approximately \$70,000 for the year ended December 31, 2008 and for each year thereafter for the remaining life of the patents covering the subject technologies, with September 2017 the date of the last to expire related patent. The agreements commit the Company to spend a minimum of \$250,000 per year to advance the AMPAKINE compounds until the Company begins marketing an AMPAKINE compound. The agreements also commit the Company to pay up to an additional \$875,000 upon achievement of certain clinical testing and regulatory approval milestones, and to remit a portion of certain remuneration received in connection with sublicensing agreements.

Note 8 — Related Party Transactions

During the years ended December 31, 2008, 2007 and 2006, the Company paid scientific and other consulting fees to directors and/or stockholders aggregating approximately \$160,000, \$160,000 and \$174,000, respectively. Under certain circumstances, the Company is obligated to make royalty payments to certain of its scientific consultants, some of whom are stockholders, upon successful commercialization of certain of its products by the Company or its licensees.

Note 9 — Income Taxes

The Company uses the liability method of accounting for income taxes as set forth in Statement of Financial Accounting Standards No. 109, "Accounting for Income Taxes" ("SFAS 109"). Under the liability method, deferred taxes are determined based on differences between the financial statement and tax bases of assets and liabilities using enacted tax rates. As of December 31, 2008, the Company had federal and California tax net operating loss carryforwards of approximately \$82,900,000 and \$61,700,000, respectively. The difference between the federal and California tax loss carryforwards is primarily attributable to the capitalization of research and development expenses for California franchise tax purposes. The federal and California net operating loss carryforwards will expire at various dates from 2009 through 2028. The Company also has federal and California research and development tax credit carryforwards totaling approximately \$2,100,000 and \$1,500,000, respectively. The federal research and development tax credit carryforwards will expire at various dates from 2009 through 2028. The California research and development tax credit carryforward does not expire and will carryforward indefinitely until utilized.

The Company's effective tax rate is different from the federal statutory rate of 35% due primarily to operating losses that receive no tax benefit as a result of a valuation allowance recorded for such losses.

Pursuant to Internal Revenue Code Sections 382 and 383, use of the Company's net operating loss and credit carryforwards may be limited if a cumulative change in ownership of more than 50% occurs within any three-year period since the last ownership change. The Company may have had a change in control under these Sections. However, the Company does not anticipate performing a complete analysis of the limitation on the annual use of the net operating loss and tax credit carryforwards until the time that it projects it will be able to utilize these tax attributes.

Significant components of the Company's deferred tax assets as of December 31, 2008 and December 31, 2007 are shown below. A valuation allowance of \$39,222,000 as of December 31, 2008 has been established against the Company's deferred tax assets as realization of such assets is uncertain. The increase in the valuation allowance of \$4,416,000 from December 31, 2007 to December 31, 2008 relates primarily to continuing net operating losses.

Deferred tax assets consist of the following:

	December 31, <u>2008</u>	December 31, <u>2007</u>
Net operating loss carryforwards	\$32,519,000	\$28,736,000
Research and development credits	3,037,000	2,752,000
Capitalized research and development costs	1,286,000	1,186,000
Non-cash stock-based compensation	2,136,000	1,839,000
Depreciation	81,000	100,000
Other, net	<u>163,000</u>	<u>193,000</u>
Net deferred tax assets	39,222,000	34,806,000
Valuation allowance for deferred tax assets	<u>(39,222,000)</u>	<u>(34,806,000)</u>
Total deferred tax assets	<u>\$ —</u>	<u>\$ —</u>

In June 2006, The FASB issued Interpretation No. 48, "Accounting for Uncertainty in Income Taxes, an Interpretation of FASB Statement No. 109." Interpretation No. 48 clarifies the accounting for uncertainty in income taxes recognized in an enterprise's financial statements in accordance with SFAS 109. This Interpretation prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. Interpretation No. 48 also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure and transition. Interpretation No. 48 is effective for fiscal years beginning after December 15, 2006. The cumulative effect, if any, of applying the Interpretation is to be reported as an adjustment to the opening balance of retained earnings in the year of adoption. The impact of the Company's reassessment of its tax positions in accordance with Interpretation No. 48 did not have an effect on the Company's results of operations, financial condition or liquidity. As of December 31, 2008, the Company does not have any unrecognized tax benefits related to various federal and state income tax matters. The Company will recognize accrued interest and penalties related to unrecognized tax benefits in income tax expense.

The Company is subject to U.S. federal income tax as well as income tax of multiple state tax jurisdictions. The Company is currently open to audit under the statute of limitations by the Internal Revenue Service for the years ending December 31, 2005 through 2007. The Company and its subsidiaries' state income tax returns are open to audit under the statute of limitations for the years ended December 31, 2004 through 2007. The Company does not anticipate any material amount of unrecognized tax benefits within the next 12 months.

Note 10 — Quarterly Financial Information (Unaudited)

Summarized quarterly financial data for the years ended December 31, 2008 and 2007, respectively is as follows:

	Three Months Ended March 31, 2008	Three Months Ended June 30, 2008	Three Months Ended September 30, 2008	Three Months Ended December 31, 2008
2008 Quarters				
Total revenues	\$ —	\$ —	\$ —	\$ —
Total costs and expenses	4,559,527	4,076,293	3,230,693	3,172,414
Loss from operations	(4,559,527)	(4,076,293)	(3,230,693)	(3,172,414)
Net loss	\$ (4,371,399)	\$ (3,946,990)	\$ (3,147,976)	\$ (3,129,501)
Basic and diluted loss per share	\$ (0.09)	\$ (0.08)	\$ (0.07)	\$ (0.07)
	Three Months Ended March 31, 2007	Three Months Ended June 30, 2007	Three Months Ended September 30, 2007	Three Months Ended December 31, 2007
2007 Quarters				
Total revenues	\$ —	\$ —	\$ —	\$ —
Total costs and expenses	4,026,918	2,972,324	3,123,223	3,524,751
Loss from operations	(4,026,918)	(2,972,324)	(3,123,223)	(3,524,751)
Net loss	\$ (3,884,066)	\$ (2,850,191)	\$ (2,962,211)	\$ (3,272,695)
Basic and diluted loss per share	\$ (0.10)	\$ (0.07)	\$ (0.07)	\$ (0.07)

Note 11 — Subsequent Event

In April 2009, the Company obtained a commitment to purchase shares of convertible preferred stock pursuant to a registered direct offering to a single institutional investor, representing gross proceeds of approximately \$1.5 million. The preferred stock is convertible into shares of the Company's common stock at a price of \$0.17 per share.

The investor will also receive warrants to purchase 6,941,176 shares of the Company's common stock. The warrants have an exercise price of \$0.3401 per share, are exercisable after the six-month anniversary of the closing of the transaction and will have a three-year term thereafter from such date. The closing of the offering is expected to take place on or before April 17, 2009, subject to the satisfaction of customary closing conditions.