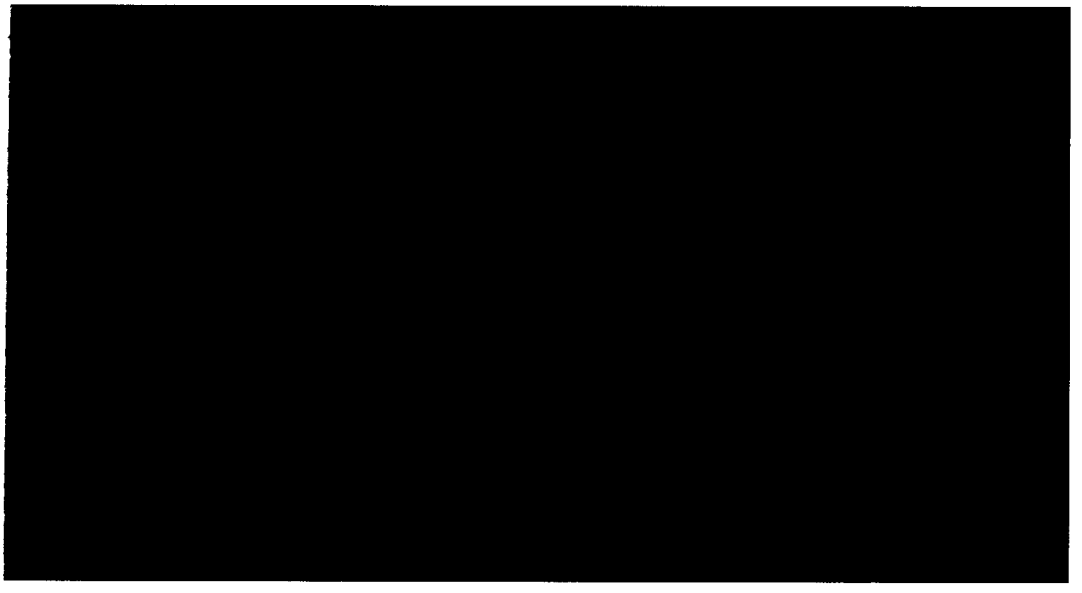
ANNUAL REPORT 2008



GTx®

New Science. Established Pathways. Better Medicines.℠

GTx, Inc. is a biopharmaceutical company dedicated to the discovery, development, and commercialization of small molecules that selectively target hormone pathways to prevent and treat cancer, osteoporosis and bone loss, muscle wasting and other serious medical conditions.

GTx®

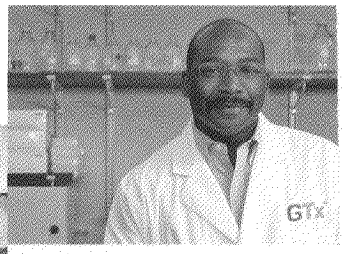
New Science. Established Pathways. Better Medicines.℠

PRODUCT CANDIDATE PIPELINE

DRUG CANDIDATE/INDICATION	CLASS	PHASE I	PHASE II	PHASE IIB	PHASE III	NDA	MARKETED
FARESTON *toremifene citrate (60 mg)*	SERM	●	●	●	●	●	●
For the treatment of advanced breast cancer							
Toremifene citrate (80 mg)	SERM	●	●	●	●	●	
For the prevention of fractures in men with prostate cancer on ADT							
Toremifene citrate (20 mg)	SERM	●	●	●	●		
For the prevention of prostate cancer in high risk men							
OSTARINE™ (MK-2866)*	SARM	●	●				
For the treatment of sarcopenia							
MK-0773*	SARM	●	●				
For the treatment of sarcopenia							
OSTARINE™ (MK-2866)*	SARM	●	●				
For the treatment of cancer cachexia							
OSTARINE™ (MK-2866)*	SARM	●					
For the treatment of other musculoskeletal loss indications							
GTx-758	ORAL LH INHIBITOR	●					
For the treatment of advanced prostate cancer							

** Part of the GTx and Merck joint research, development and commercialization SARM collaboration*

On facing page: Shontelle Dodson, PharmD, Vice President, Medical Affairs. Below: Yali He, PhD, Senior Research Scientist Medicinal Chemistry. Right: Ronald Morton Jr., MD, FACS, Vice President, Chief Medical Officer.



Pioneering and dedicated professionals delivering groundbreaking new science

A PIONEERING SPIRIT has guided GTx since our inception in 1997. The vision behind GTx's original scientific program was simple but bold. Both testosterone and estrogen had been understood for decades to play a role in the development of prostate cancer, yet medicine focused almost exclusively on the proliferative effects of testosterone. GTx investigated a different pathway, estrogen.

Twelve years later, this unconventional inquiry into the role of estrogen in prostate cancer and men's health has created lasting value. Clinical programs developing the company's lead product candidate, toremifene, a selective estrogen receptor modulator (SERM), have yielded two near term revenue opportunities. Toremifene 80 mg, following positive Phase III clinical trial results in 2008, is now being reviewed for marketing approval in the United States for the prevention of bone fractures in men with prostate cancer on androgen deprivation therapy (ADT). In a second clinical development program, toremifene 20 mg is nearing completion of a pivotal Phase III clinical trial for the prevention of prostate cancer in high risk men with a precancerous lesion of the prostate known as high grade prostatic intraepithelial neoplasia (PIN).

We have developed a deep scientific expertise in toremifene, a selective receptor modulator (SRM) for the estrogen receptor, and in other SRMs which has allowed us to diversify our product candidate portfolio. The rationale for our interest in SRMs is that although steroidal hormones (e.g., testosterone, estrogens, glucocorticoids, etc.) have been used for treatments for many years, their use has been limited by undesirable side effects or pharmacokinetic properties. In contrast, SRMs may be designed to bind to the same hormone receptors and block or stimulate the receptor in a tissue selective manner, potentially mimicking the beneficial effects of the natural or synthetic hormone in one tissue while minimizing the unwanted effects in other tissues.

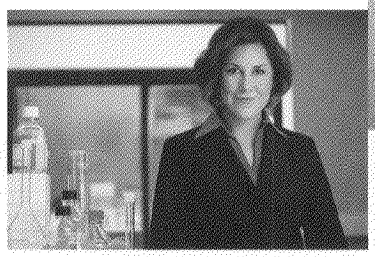
GTx scientists were the first to report the discovery of a SRM for the testosterone receptor, now known as a selective androgen receptor modulator (SARM). We forged a strategic global partnership with Merck & Co., Inc. to develop and commercialize SARMs. The GTx-Merck SARM research and clinical development program is evaluating several SARMs to treat a variety of muscle wasting indications.

In 2009, we began the clinical development of the newest product candidate to emerge from our pipeline, GTx-758. GTx-758 is an oral LH inhibitor for the treatment of advanced prostate cancer, and GTx expects to have proof of concept in man established by the end of 2009.

The success of these discovery and clinical programs has enabled us to recruit scientists and business pioneers to GTx. We have attracted highly talented individuals from pharmaceutical firms and academic centers who share our vision to build an enduring biopharmaceutical company dedicated to developing new science to bring better medicines to patients.


We are on a winning path.
New Science

On facing page: Casey Bohl, MD, PhD, Research Scientist, Biology and Molecular Pharmacology. Below: Audra Bares, Project Manager, Medical Affairs. Right: Mike Brown, Vice President, Marketing and Managed Care.



Our pursuit of established pathways to make better medicines is our strength and makes us different

OUR SCIENTIFIC EXPERTISE is in the discovery and development of SRMs–selective receptor modulators. These small molecules bind to and modulate the same cellular receptors as natural hormones with established pathways, such as androgens and estrogens, and have names like SERMs (selective estrogen receptor modulators) and SARMs (selective androgen receptor modulators).

Natural and synthetic steroidal hormones have been prescribed as pharmaceuticals for decades but their therapeutic use has been limited by undesirable side effects or pharmacokinetic properties. GTx is exploiting established endocrine pathways with novel, non-steroidal small molecule SRMs with the intention to harness the clinical benefits of natural hormones while minimizing unwanted steroidal side effects.

Utilizing established hormonal pathways as drug targets not only makes for fascinating science, but it also reduces our development and commercialization risks. At GTx, we are making cutting-edge discoveries with novel SRMs which at the same time leverage decades of scientific groundwork into the structure and activity of hormone receptors and their ligands. This is a very different approach from many other biopharmaceutical companies which focus on cellular targets and signaling pathways that are unknown and have not been validated.

Even beyond our science, GTx is different. GTx insiders own nearly 50% of the company. As we are substantial shareholders, we take ownership of our future. We are building GTx to last and have diversified both our assets and our sources of income. We have built GTx into a company with a broad portfolio of distinct clinical programs with multiple near term revenue opportunities.

Partnerships are an important component of our strategy because they extend our research and commercialization capabilities and provide us with additional non-dilutive near term capital. These partnerships make GTx stronger. Our SARM collaboration is unique. GTx and Merck pooled their respective SARM compounds and product candidates to leverage the expertise and best assets of each company in order to be first to market and "to win" in this exciting new class of drugs. In this collaboration structure, the economics allow the science to determine which molecules move forward. By licensing European toremifene rights to Ipsen, we sought and found a partner that already commercializes an ADT drug and has existing, deep physician relationships in urology. We believe this will make toremifene successful in Europe.


We take ownership of GTx's future.
Established Pathways

Below: Elizabeth Simpson, Research Technician Preclinical. Right: Kimberly Stewart, Laboratory Technician Analytical.

Persistent in our drive to discover and deliver better medicines

WE ARE PERSISTENT in our drive to bring important new medicines to patients.

When we began the clinical development of toremifene 80 mg in 2001, the long term effects of androgen deprivation therapy (ADT) were not well understood. Few physicians were aware of the serious estrogen deficiency side effects of long term ADT, such as severe bone loss, increased risk of fracture, adverse lipid changes, and bothersome hot flashes and breast pain and tenderness. Eight years later, at the same time that our NDA for toremifene 80 mg is being reviewed for marketing approval in the US, urologists and medical oncologists are increasingly concerned about bone loss and the greater risk of fractures, which can lead to a reduction in survival in men with prostate cancer on ADT.

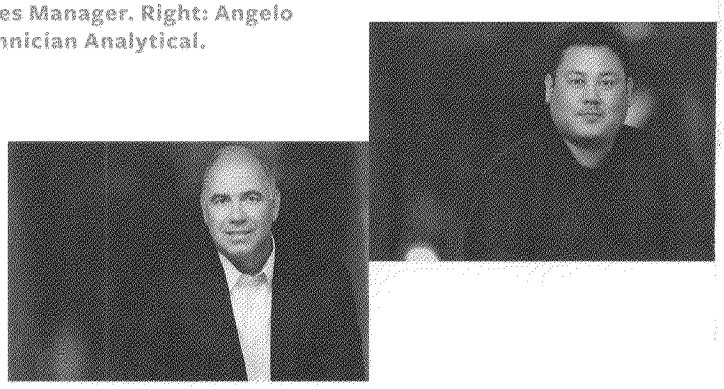
Similarly, when we began the clinical development of toremifene 20 mg for the prevention of prostate cancer in men with high grade PIN, physicians as well as investors questioned the role of high grade PIN in clinical decisions. It is now well established that high grade PIN is the precancerous lesion of the prostate and that men with high grade PIN are at greater risk of developing prostate cancer. Toremifene 20 mg is now in a Phase III clinical trial, which will define the actual risk for prostate cancer and determine the role of toremifene in prostate cancer prevention in men with high grade PIN.

GTx and Merck are developing a new class of drugs, SARMs, for the treatment of severe musculoskeletal wasting conditions. In December 2006, GTx announced that Ostarine™ (also known as MK-2866) being developed for sarcopenia, a severe muscle loss condition associated with aging which results in immobility and loss of independence, increased morbidity and early death, met its primary endpoint to build lean body mass in elderly men and postmenopausal women in a Phase II clinical trial. In 2009, GTx and Merck will be completing a Phase II clinical trial evaluating another SARM for sarcopenia. In 2008, we reported successful results of a Phase II clinical trial evaluating Ostarine™ for cancer cachexia, or cancer induced muscle loss, and we are planning to initiate a new cancer cachexia clinical trial in 2009. GTx and Merck are exploring additional indications for SARM clinical development.

In 2009, GTx is leveraging its scientific core competency and creativity with the initiation of Phase I clinical trials evaluating the newest product candidate to emerge from our discovery pipeline, GTx-758, an oral LH inhibitor for the treatment of advanced prostate cancer. In preclinical *in vitro* and *in vivo* models, GTx-758 has demonstrated the potential to achieve rapid medical castration to control advanced prostate cancer without certain serious side effects associated with castration, such as bone loss and hot flashes.

We are focused on success.
Better Medicines

Facing page: the entire staff of GTx, Inc. Below: Joe Liguori, Regional Sales Manager. Right: Angelo Luciano, Laboratory Technician Analytical.



Creating a company in which the best and brightest thrive

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THE FOUNDATION of GTx is our scientific expertise in the discovery and development of selective receptor modulators. We are committed to leveraging that expertise to bring to market new and better medicines to fill unmet medical needs.

GTx has never been a "me too" company–not in our science, the therapeutic approaches we pursue, nor in our organization. The culture of GTx is set by who we are: pioneers with high standards who find a way to win.

Our employees are drawn to GTx from successful careers elsewhere for the science, the product candidate pipeline, and the opportunity to shape a growing company. Once here, most stay–turnover at GTx is virtually non-existent because making progress together developing and commercializing cutting-edge science for the benefit of patients is deeply satisfying work.

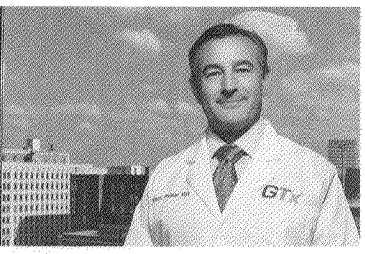
The culture at GTx fosters productivity. Work at GTx is often multifunctional, and creative thinking and the ability to execute are highly valued. We reward initiative and self-pride and motivate our employees to exceed expectations.

We have tall ambitions, but our plans are specific. Our commercial and medical strategies focus on our strengths in urology. We have attracted talented senior management with strong experience in launching and successfully commercializing products in urology and bone health for large pharmaceutical companies.

We are proud of what we have accomplished. Just twelve years since our founding, GTx has four unique clinical development programs of first-in-class molecules for large unmet medical needs. We have shown that we have the expertise to discover and to bring molecules from the laboratory through clinical development and now to submit and file a New Drug Application. When our product candidates receive regulatory approval, we will demonstrate our ability to successfully commercialize our product candidates as well. Few emerging biopharmaceutical companies have such a broad pipeline with multiple near term revenue opportunities.


We are
new science,
established pathways,
better medicines.

We are built to last.



Mitchell S. Steiner, MD, FACS
Vice Chairman and
Chief Executive Officer

To our shareholders

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SINCE THE FOUNDING of GTx twelve years ago, we have endeavored to build a company with a deep pipeline of product candidates representing important new medicines yielding multiple opportunities for revenue.

As owners with substantial stakes in GTx, our management and Board of Directors seek to maximize value and reduce risks by purposefully diversifying GTx's assets and its sources of income. As a result, GTx has a broad portfolio of clinical programs supported by potential near term product revenues, milestones and royalties from our strategic partners, as well as the potential for additional payments from the licensing of unpartnered product candidates. At year end 2008, GTx had $97.7 million in cash, cash equivalents and short term investments.

By design, we are building GTx to last, and we believe our strategy is working.

In 2008, we reported successful results in the toremifene 80 mg Phase III ADT clinical trial, and we are now one of a few biotech companies with a New Drug Application (NDA) under review by the United States Food and Drug Administration, the final step before commercialization. Ostarine™ (designated by Merck as MK-2866), a selective androgen receptor modulator (SARM) which we are developing with Merck & Co., Inc., met the primary endpoint of a Phase II cancer cachexia clinical trial and is advancing in clinical development. And we have initiated clinical development of our newest small molecule, GTx-758, for the treatment of advanced prostate cancer.

By year end 2009, each of our clinical programs will have passed through a major milestone.

As for toremifene 80 mg for the prevention of fractures in men with prostate cancer on androgen deprivation therapy (ADT), the NDA is being reviewed by the FDA, and we anticipate receiving a complete response letter from the FDA later this year. We also expect our European partner, Ipsen, to file its marketing application for toremifene 80 mg with the EMEA this year.

By year end, pending approval by the FDA, we will be executing the commercial launch of toremifene 80 mg.

Last year, after receiving our Phase III results for toremifene 80 mg, we initiated our prelaunch plan to hire the senior commercial and medical affairs management, and today those senior teams are in place. Once we obtain FDA approval, we anticipate hiring 65 sales consultants to commercialize the product. We are in an opportunistic market environment for hiring talented sales consultants and are already identifying the strongest potential candidates.

We have conducted extensive market research affirming our confidence in the toremifene 80 mg opportunity. Even with no promotional activity, more than 40% of the urology key opinion leaders we have surveyed agree that bone fractures in men with advanced prostate cancer are a serious side effect of ADT that can reduce a man's life expectancy on ADT by more than three years. Few patients on ADT are being treated for bone loss today, in spite of the well recognized risk for fractures, because there is currently no FDA approved treatment for this indication.

As for toremifene 20 mg for the prevention of prostate cancer in men with high grade prostatic intraepithelial neoplasia (PIN), we expect to conduct the Phase III clinical trial efficacy analysis this summer. To define the true risk of prostate cancer and to have a treatment to prevent prostate cancer in men with high grade PIN will be an important advancement in the field of prostate cancer.

By year end, pending successful toremifene 20 mg phase III clinical trial results, we will be preparing submission of a second NDA.

We are in discussions to license toremifene outside of the U.S. and Europe.

We are making progress in our collaborations with several diagnostic companies to identify high grade PIN patients using a noninvasive laboratory test. Moreover, we are exploring the potential for other exciting important molecular markers of prostate cancer such as TMPRSS2-ERG, an estrogen regulated oncoprotein that has been shown to be associated with aggressive prostate cancer, to identify

We are on a winning path. We have shown we can discover and synthesize new drugs, develop them from Phase I through Phase III clinical trials, and submit a NDA. We have built GTx to last.

another subset of patients who are at high risk for developing prostate cancer and who may benefit from toremifene 20 mg.

Our SARM collaboration with Merck is composed of multiple clinical development programs. Several SARM compounds are being evaluated in Phase I and Phase II clinical trials. We are advancing SARMs for the treatment of sarcopenia, which is muscle loss of aging resulting in increased morbidity and mortality, a major opportunity. We are developing Ostarine™ (MK-2866) to treat cancer cachexia (cancer induced muscle loss), a critical unmet need which is the cause of 20% of cancer deaths, and which has a potentially expeditious regulatory pathway. We are also evaluating additional indications for SARM clinical development.

By year end, we anticipate having completed a Phase II sarcopenia clinical trial evaluating the SARM MK-0773 and to be planning the next SARM trial for sarcopenia. We expect to have an ongoing Ostarine™ clinical trial in cancer cachexia.

We are pleased with the progress of our collaboration with Merck. GTx and Merck are aligned in our objectives, work well together, and are leveraging the strengths of our combined SARM programs to maximize the value of these assets to efficiently develop drugs so that we can both generate near term revenue.

Our newest product candidate, GTx-758, entered Phase I clinical testing in February. GTx-758, which was discovered at GTx, is a small molecule oral LH inhibitor to treat advanced prostate cancer.

We are excited about GTx-758 because preclinical *in vitro* and *in vivo* data suggest it has the potential to rapidly reduce testosterone, a primary growth factor of prostate cancer, without also causing certain side effects such as bone loss and hot flashes which are common with current androgen deprivation therapies for prostate cancer. We believe GTx-758 has the potential to be best-in-class ADT.

ADT drugs have a well defined regulatory pathway, as the level of testosterone is the well accepted surrogate endpoint of clinical trials for first line prostate cancer treatment. The market opportunity is large. In 2008 annual US sales of ADT drugs exceeded $1.7 billion.

By year end, we expect to have established proof of concept in man in a second GTx-758 Phase I clinical trial and to be preparing to initiate late stage clinical trials in 2010.

We are on a winning path. I am proud of what we have accomplished at GTx. We have shown we can discover and synthesize new drugs, develop them from Phase I through Phase III clinical trials, and submit a NDA. We now look forward to showing, pending FDA approval of toremifene 80 mg, that we can also successfully commercialize products. We have built GTx to last.

Yours truly,

Mitchell S. Steiner, MD, FACS
Vice Chairman and Chief Executive Officer

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
For the transition period from _____ to _____

Commission file number 000-50549

GTx, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**62-1715807**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
175 Toyota Plaza **7th Floor** **Memphis, Tennessee**	**38103**
(Address of principal executive offices)	(Zip Code)

(901) 523-9700
(Registrant's telephone number, including area code)

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

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, par value $0.001 per share	The NASDAQ Stock Market, LLC

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

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "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 Rule 12b-2 of the Act).
Yes ☐ No ☒

The aggregate market value of common stock held by non-affiliates of the registrant based on the closing sales price of the registrant's common stock on June 30, 2008 as reported on the NASDAQ Global Market was $274,064,221.

There were 36,408,209 shares of registrant's common stock issued and outstanding as of February 26, 2009.

DOCUMENTS INCORPORATED BY REFERENCE

Certain portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A, not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, in connection with the Registrant's 2009 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements. The forward-looking statements are contained principally in the sections entitled "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Business." These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements include statements about:

- the anticipated progress of our and our collaborators' research, development and clinical programs, including the timing of regulatory submissions and whether future clinical trials will achieve similar results to clinical trials that we have successfully concluded;
- potential future licensing fees, milestone payments and royalty payments including any milestone payments or royalty payments that we may receive under our collaborative arrangements with Ipsen Developments Limited, formerly known as Ipsen Limited, and Merck & Co., Inc.;
- our and our collaborators' ability to obtain and maintain regulatory approvals of our product candidates and any related restrictions, limitations, and/or warnings;
- our and our collaborators' ability to market, commercialize and achieve market acceptance for our product candidates or products that we may develop;
- our and our collaborators' ability to generate additional product candidates for clinical testing;
- our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others; and
- our estimates regarding the sufficiency of our cash resources.

In some cases, you can identify forward-looking statements by terms such as "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "will," "would," and similar expressions intended to identify forward-looking statements. Forward-looking statements reflect our current views with respect to future events, are based on assumptions, and are subject to risks, uncertainties and other important factors. We discuss many of these risks, uncertainties and other important factors in this Annual Report on Form 10-K in greater detail in the section entitled "Risk Factors" under Part I, Item 1A below. Given these risks, uncertainties and other important factors, you should not place undue reliance on these forward-looking statements. Also, forward-looking statements represent our estimates and assumptions only as of the date of this Annual Report on Form 10-K. You should read this Annual Report on Form 10-K and the documents that we incorporate by reference in and have filed as exhibits to this Annual Report on Form 10-K, completely and with the understanding that our actual future results may be materially different from what we expect.

Except as required by law, we assume no obligation to update any forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in any forward-looking statements, even if new information becomes available in the future.

PART I

ITEM 1. BUSINESS

Overview

GTx, Inc., a Delaware corporation incorporated on September 24, 1997, is a biopharmaceutical company dedicated to the discovery, development and commercialization of small molecules that selectively target hormone pathways to treat cancer, osteoporosis and bone loss, muscle loss and other serious medical conditions. We are developing toremifene citrate, a selective estrogen receptor modulator, or SERM, in two separate clinical programs in men: first, toremifene 80 mg in a completed pivotal Phase III clinical trial for the prevention of bone fractures and treatment of other estrogen deficiency side effects of androgen deprivation therapy, or ADT, in men with prostate cancer, and second, toremifene 20 mg in an ongoing pivotal Phase III clinical trial for the prevention of prostate cancer in high risk men with precancerous prostate lesions called high grade prostatic intraepithelial neoplasia, or high grade PIN. In the first quarter of 2008, we announced that the Phase III clinical trial results for toremifene 80 mg for the prevention of bone fractures and the treatment of other estrogen deficiency side effects of ADT in men with prostate cancer showed that toremifene 80 mg reduced new morphometric vertebral fractures, met other key estrogen deficiency endpoints of bone mineral density, or BMD, lipid profiles and gynecomastia, and also showed that toremifene 80 mg demonstrated a reduction in hot flashes in a subset of patients. In December 2008, we submitted a New Drug Application, or NDA, for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT, which has been accepted for filing and review by the U.S. Food and Drug Administration, or FDA. We have licensed to Ipsen Developments Limited (formerly known as Ipsen Limited), or Ipsen, exclusive rights in the European Union, Switzerland, Norway, Iceland, Lichtenstein and the Commonwealth of Independent States, which we collectively refer to as the European Territory, to develop and commercialize toremifene in all indications which we have licensed from Orion Corporation, or Orion, which include all indications in humans except breast cancer outside of the United States.

In December 2007, we and Merck & Co., Inc., or Merck, entered into a collaboration to discover and develop selective androgen receptor modulators, or SARMs, a new class of drugs with the potential to treat sarcopenia, which is the loss of skeletal muscle mass resulting in reduced physical strength and ability to perform activities of daily living, cancer cachexia (cancer induced muscle loss), and other musculoskeletal wasting or muscle loss conditions. We and Merck are evaluating multiple SARM product candidates, including Ostarine™ (designated by Merck as MK-2866) and MK-0773, for a variety of indications including sarcopenia and cancer cachexia. In October 2008, we announced topline results of a Phase II clinical trial evaluating Ostarine™ in patients with cancer cachexia. In 2009, we and Merck expect to complete an ongoing Phase II clinical trial evaluating MK-0773 in sarcopenia and expect to initiate a clinical trial evaluating Ostarine™ in cancer cachexia. In addition to cancer cachexia and sarcopenia, we and Merck are evaluating additional muscle loss indications for potential SARM clinical development.

We are developing GTx-758, an oral luteinizing hormone, or LH, inhibitor for the treatment of advanced prostate cancer. In preclinical *in vitro* and *in vivo* models, GTx-758 has demonstrated the potential to reduce testosterone to castrate levels without causing certain estrogen deficiency side effects such as bone loss and hot flashes. We have initiated a Phase I clinical trial evaluating GTx-758 in healthy volunteers in the first quarter of 2009. We further expect to establish proof of concept for GTx-758 with a Phase I multiple ascending dose clinical trial that we are planning to initiate in the second quarter of 2009 and conclude in the fourth quarter of 2009. We also have an extensive preclinical pipeline generated from our own discovery program, including GTx-878, an estrogen receptor beta agonist.

We currently market FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in postmenopausal women in the United States. The active pharmaceutical ingredient in FARESTON® is the same as in our toremifene 80 mg and toremifene 20 mg product candidates. In January 2005, we acquired from Orion the right to market FARESTON® tablets in the United States for the metastatic breast cancer indication. We also acquired from Orion a license to toremifene for all indications in humans worldwide, except breast cancer outside of the United States.

Our most advanced product candidate, toremifene, is being developed for the prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer and for the prevention of prostate cancer in high risk men with high grade PIN. ADT is the most common treatment for advanced, recurrent, or metastatic prostate cancer, and we believe that it is currently used to treat approximately 700,000 men with prostate cancer in the United States. In men, aromatase converts testosterone to estrogen. By reducing testosterone to castrate levels, ADT depletes up to 80% of a man's estrogen, resulting in multiple estrogen deficiency side effects. These side effects include increased risk of serious bone fractures, which can reduce survival in men on ADT by more than three years, as well as accelerated and continuous bone loss. Other estrogen deficiency side effects include adverse lipid changes and increased risk of cardiovascular disease, as well as common symptomatic side effects, such as hot flashes and gynecomastia (painful breast enlargement). No treatments have been approved by the FDA for the prevention of bone fractures and other estrogen deficiency side effects in men with prostate cancer on ADT. We commenced a pivotal Phase III clinical trial of toremifene 80 mg for the prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer under a Special Protocol Assessment, or SPA, with the FDA in November 2003. A SPA is designed to facilitate the FDA's review and approval of drug products by allowing the agency to evaluate the proposed design and size of clinical trials that are intended to form the primary basis for determining a drug product's efficacy. The primary endpoint of our Phase III trial was the reduction of new morphometric vertebral fractures measured by x-ray, and the secondary endpoints included BMD, lipid profile changes, gynecomastia and hot flashes. In the first quarter of 2008, we announced that the results of the Phase III clinical trial showed that toremifene 80 mg reduced new morphometric vertebral fractures, met other key estrogen deficiency endpoints of BMD, lipid profiles and gynecomastia and also showed that toremifene 80 mg demonstrated a reduction in hot flashes in a subset of patients. In December 2008, we submitted a NDA to the FDA for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT. The NDA has been accepted for filing and review by the FDA. We cannot predict if the NDA will be approved in a timely manner, or at all, and if approved, if the FDA will require any restrictions, limitations, and/or warnings in the label.

In the United States, prostate cancer is one of the most commonly diagnosed cancers and the second leading cause of cancer-related deaths in men. Men who have high grade PIN are at high risk of developing prostate cancer We believe that more than 40% of men with high grade PIN detected on a prostate biopsy develop prostate cancer within three years. In the United States, there are over 115,000 new cases of high grade PIN diagnosed each year and an estimated 14 million men under the age of 80 may unknowingly harbor this condition. Currently, there is no approved treatment to prevent prostate cancer in high risk men with high grade PIN. In January 2005, we initiated a pivotal Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, which is being conducted under a SPA with the FDA. A planned efficacy interim analysis was conducted in the second quarter of 2008 which did not reach the specified statistical outcome of $p<0.003$ required under the SPA. We anticipate conducting a planned efficacy analysis after a certain number of additional cancer events have been recorded among study patients, which we currently expect to occur in the summer of 2009. If the efficacy analysis achieves a prespecified statistical goal, we plan to submit a NDA to the FDA. If we are able to submit a NDA based on the results of the planned efficacy analysis, we will continue the study to collect efficacy data and safety data during the NDA review process to satisfy the FDA's safety requirements set forth in the SPA. If the results from the efficacy analysis do not satisfy the specified statistical requirements, we will make a final determination about the continuation of the toremifene 20 mg Phase III clinical trial.

In our third clinical program, SARMs are being developed to treat sarcopenia, which is the loss of skeletal muscle mass resulting in reduced physical strength and ability to perform activities of daily living, cancer cachexia (cancer induced muscle loss), and other musculoskeletal wasting or muscle loss conditions. In December 2006, we announced that Ostarine™, a SARM, met its primary endpoint in a Phase II proof of concept, double blind, randomized, placebo controlled clinical trial in 60 elderly men and 60 postmenopausal women. In October 2008, we announced topline results of a Phase II clinical trial evaluating Ostarine™ in patients with cancer cachexia. In this analysis, the study met its primary endpoint of absolute change in total lean body mass (muscle) compared to placebo and the secondary endpoint of muscle function (performance) after 16 weeks of treatment in 159 cancer patients with reported weight loss. In 2009, we and Merck expect to complete an ongoing Phase II clinical trial evaluating MK-0773 in sarcopenia and expect to initiate a clinical trial evaluating Ostarine™ in cancer cachexia.

In December 2007, we entered into a license and collaboration agreement with Merck that governs our and Merck's joint research, development and commercialization of SARM compounds and related SARM products, including SARMs currently being developed by us and Merck and those yet to be discovered, for all potential

indications of interest. Under the agreement, we are conducting preclinical research of SARM compounds and products, and Merck is primarily responsible for conducting and funding development and commercialization. Merck paid us an upfront licensing fee of $40.0 million, which was received in January 2008. Merck also agreed to pay us $15.0 million in guaranteed cost reimbursements for research and development activities in equal annual installments over a three year period beginning on the first anniversary of the effective date of the agreement. In December 2008, we received $5.0 million from Merck as the first of the three annual installment payments. We are also eligible to receive up to $422.0 million in future milestone payments associated with the development and regulatory approval of a lead product candidate, including Ostarine™, as defined in the agreement, if multiple indications are developed and receive required regulatory approvals, as well as additional milestone payments for the development and regulatory approval of other product candidates developed under the agreement, upon the achievement of such development and regulatory approval milestones and assuming the continued effectiveness of the agreement. Merck also has agreed to pay us tiered royalties on net sales of products that may be developed under the agreement. On the date the license and collaboration agreement with Merck became effective in December 2007, we issued to Merck 1,285,347 newly-issued shares of our common stock for an aggregate purchase price of approximately $30.0 million.

In September 2006, we entered into a collaboration and license agreement with Ipsen pursuant to which we granted Ipsen exclusive rights in the European Territory to develop and commercialize toremifene in all indications that we have licensed from Orion. In accordance with the terms of the agreement, Ipsen paid us €21.5 million (approximately $27.1 million) as a license fee and expense reimbursement and is paying us a total of €1.5 million in equal installments over a three year period from the date of the agreement, of which two installments have been received by us. Pursuant to the agreement, we are also entitled to receive from Ipsen up to an aggregate of €39.0 million in milestone payments depending on the successful development and launch of toremifene in certain countries of the European Territory for the high grade PIN indication, subject to certain conditions, and the ADT indication. In February 2008, we earned a milestone of €1.0 million (approximately $1.5 million) with the achievement of the primary endpoint in the toremifene 80 mg Phase III clinical trial. Ipsen has agreed to be responsible for and to pay for all clinical development, regulatory and launch activities to commercialize toremifene in the European Territory for the high grade PIN indication and the ADT indication. We will remain similarly responsible for all development and regulatory activities outside of the European Territory. However, Ipsen has agreed to pay a portion of our toremifene development costs in the United States if certain conditions are met. Under the agreement, Ipsen must elect to retain its rights to commercialize toremifene and other products containing toremifene for the high grade PIN indication. Until such time as Ipsen shall make its election, however, Ipsen is required to initiate and carry out the development of toremifene for the high grade PIN indication in the European Territory and to pay all costs associated therewith.

Scientific Background on Estrogens and Androgens

Both estrogens and androgens are hormones that play critical roles in men's and women's health, regulating not only the reproductive system, but also having important effects on the muscular, skeletal, cardiovascular, metabolic and central nervous systems. In order for the body to function properly, a balance must exist between estrogens and androgens.

Estrogens are the primary hormone regulating bone turnover and bone quality, reduce the risk of skeletal fractures, may be cardioprotective by having a favorable effect on lipid profile and may reduce hot flashes. As testosterone levels decrease in aging men, there is also a gradual increase in estrogen levels in the blood relative to testosterone levels which may promote benign prostatic hyperplasia, or BPH, initiate prostate cancer and cause gynecomastia.

Testosterone, the predominant androgen in men, is important for mental well-being and for masculine physical characteristics, such as muscle size and strength and bone strength. Male reproductive health is also dependent on testosterone to maintain sexual interest, fertility, erectile function and normal prostate function. Testosterone is converted into a more potent androgen, dihydrotestosterone, or DHT, which also stimulates sebaceous and hair glands and may cause unwanted effects like acne and hair loss. DHT is the primary androgen involved in BPH. In aging men, there is a gradual decline in testosterone levels, which contributes to a loss of muscle mass and strength, and decreased bone mineralization, which may result in osteoporosis and bone fractures, erectile dysfunction, decreased sexual interest, depression and mood changes.

Estrogens and androgens perform their physiologic functions by binding to and activating their hormone receptors located in various tissues. Once a hormone binds with its receptor, this activates a series of cellular events that results in estrogenic or androgenic tissue effects.

Pharmaceuticals that target estrogen or androgen receptors have been used medically for over 50 years. The drugs that have been used to stimulate androgen receptors are either natural or synthetic hormones, known as steroids. Steroids activate hormone receptors in all tissue types in a non-selective manner resulting in not only beneficial effects but also in unwanted clinical effects. In men, the absence of selectivity and conversion of testosterone to DHT may result in unwanted side effects, such as the potential stimulation of latent into clinical prostate cancer, and may enhance BPH, cause acne, cause loss of hair in men and hair growth in women and cause gynecomastia. Currently, no orally available testosterone products have been approved for use in the United States, and those testosterone products that are available must be administered by intramuscular injections or by transdermal patches or gels that may not be convenient for patients and, in some cases, can result in inconsistent blood levels of testosterone.

There are also classes of small molecules that are not steroids that can bind to the same hormone receptors. These nonsteroidal small molecules may either stimulate or block hormone receptors depending on the type of tissue in which the receptor is found and the interaction of the small molecule with the receptor. A drug that has the ability to either block or stimulate the hormone receptor is called a selective receptor modulator. A selective receptor modulator that can either block or stimulate a hormone receptor in a tissue-selective manner may be able to mimic the beneficial, while minimizing the unwanted, effects of natural or synthetic steroid hormones.

A SERM is a nonsteroidal small molecule that binds to and selectively modulates estrogen receptors. SERMs have the ability to either stimulate or block estrogen's activity in different tissue types. SERMs have been shown to mimic estrogen's beneficial action in bone and lipid profiles, and we believe that SERMs have the potential to block estrogen's harmful activity in the prostate and the breast. Examples of SERMs currently on the market include toremifene, which is FDA approved to treat metastatic female breast cancer, and raloxifene, which is used to prevent and treat postmenopausal female osteoporosis.

A SARM is a small molecule that binds to and selectively modulates androgen receptors, the primary receptor to which testosterone binds. In men, SARMs potentially have beneficial action in bone and muscle while blocking testosterone's unwanted action in the prostate and skin. We further believe that SARMs can be designed to either cross or not cross into the central nervous system and to selectively modulate androgen receptors in the brain to affect mood and sexual interest. Although no SARMs have been commercialized to date, we believe that SARMs without the harmful side effects of testosterone or other exogenous anabolic steroid therapies can potentially be developed to treat a range of medical conditions, including: (1) muscle loss conditions of chronic diseases, such as cancer, AIDS, chronic kidney disease, end-stage renal disease, neurodegenerative disorders, trauma and burns; (2) muscle loss conditions associated with aging such as frailty and sarcopenia; (3) the prevention and/or treatment of osteoporosis; (4) prostate disorders, such as BPH; (5) disorders of the central nervous system, such as low libido, depression and other mood disorders; (6) low testosterone conditions, such as primary and secondary hypogonadism; (7) male reproductive functions, such as infertility, male contraception and erectile dysfunction; and (8) other conditions, such as anemia and male hair loss.

Marketed Product

FARESTON®

We currently market FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in postmenopausal women in the United States. Toremifene is a SERM owned and manufactured by Orion. Toremifene is the active pharmaceutical ingredient in FARESTON® and is currently being developed in two separate clinical programs for toremifene 80 mg and toremifene 20 mg. On January 1, 2005, we entered into a revised license and supply agreement with Orion to exclusively license toremifene for all indications in the United States and for all indications in humans except breast cancer outside of the United States.

As part of our effort to complete the requirements for the submission of applications for regulatory approval of toremifene 80 mg and toremifene 20 mg, we have conducted a number of studies of toremifene in addition to our clinical trials, including a Thorough QT study. The results of the Thorough QT study of 250 healthy male volunteers showed that toremifene prolonged the QT interval in a dose dependent manner. Since we market FARESTON® in the United States under a license agreement with Orion, we notified the FDA of the Thorough QT study results and have proposed modifications to the FARESTON® label in the United States. FDA action on the proposed label changes is pending. Separately, Orion recommended label changes to the European Medicines Agency, or EMEA. In January 2009, the EMEA recommended that the FARESTON® label within the European Union reflect that toremifene should not be given to patients at risk of prolonged QT intervals or other certain heart problems.

We currently sell FARESTON® primarily through wholesale drug distributors. The top three distributors, McKesson Corporation, Cardinal Health, Inc. and AmerisourceBergen Corporation, accounted for approximately 96% of our product sales generated from the sale of FARESTON® for the year ended December 31, 2008. The loss of any of these three distributors could have a material adverse effect on continued FARESTON® sales. FARESTON® net product sales accounted for 8%, 15%, and 18% of our total revenue for the years ended December 31, 2008, 2007 and 2006, respectively.

Product Candidates

The following table identifies the development phase and status for each of our clinical product candidates:

Program	Product Candidate/ Indication	Development Phase	Status
SERM	**Toremifene 80 mg** Prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer	NDA under FDA review	NDA submitted for the prevention of bone fractures in December 2008 and has been accepted for filing and review by the FDA
	Toremifene 20 mg Prevention of prostate cancer in high risk men with high grade PIN	Pivotal Phase III clinical trial	Phase III clinical trial ongoing under a SPA; planned efficacy analysis expected to occur in the summer of 2009
SARM	**Ostarine™ (MK-2866) *** Treatment of cancer cachexia	Phase II clinical trial	Phase II clinical trial completed in September 2008
	MK-0773 * Treatment of sarcopenia	Phase II clinical trial	Phase II clinical trial ongoing and expected to be completed in 2009
LH inhibitor	**GTx-758** Treatment of advanced prostate cancer	Phase I clinical trial	Phase I clinical trial initiated in the first quarter of 2009

* Compound part of the GTx and Merck joint research, development and commercialization collaboration

Toremifene

Our most advanced product candidate, toremifene, is a SERM. Toremifene is being developed as a once-a-day oral tablet to (1) prevent bone fractures and treat other estrogen deficiency side effects of ADT in men with prostate cancer (80 mg dose) and (2) prevent prostate cancer in high risk men with high grade PIN (20 mg dose). In January 2005, we exclusively licensed toremifene from Orion for all indications in humans, except breast cancer outside of the United States. We licensed rights to toremifene based on toremifene's established record of safety in the treatment of postmenopausal women with metastatic breast cancer and our belief that SERMs can treat estrogen related complications resulting from ADT and reduce the incidence of prostate cancer in high risk men with high grade PIN. Under a license and supply agreement with Orion, Orion manufactures and supplies us with FARESTON®, the 60 mg dose of toremifene citrate, for sale in the United States to treat metastatic breast cancer in postmenopausal women, as well as toremifene 20 mg dose of toremifene citrate for our Phase III clinical trial for the prevention of prostate cancer in high risk men with high grade PIN. Additionally, Orion will manufacture our commercial supply of toremifene 80 mg, if FDA approval is obtained.

In September 2006, we licensed to Ipsen exclusive rights to develop and commercialize toremifene in the European Territory in all indications that we have licensed from Orion.

Toremifene 80 mg for the Prevention of Bone Fractures and Treatment of Other Estrogen Deficiency Side Effects of ADT in Men with Prostate Cancer

Scientific Overview. ADT is the most common treatment for patients who have advanced, recurrent or metastatic prostate cancer. ADT reduces testosterone, a primary growth factor for prostate cancer, to levels similar to that of castrated men. ADT is accomplished either surgically by removal of the testes, or chemically by treatment with LH releasing hormone agonists, or LHRH agonists. LHRH agonists work by shutting off LH secretion by the pituitary gland, which stops testosterone production by the testes. Examples of commercially marketed LHRH agonists are Lupron® (leuprolide acetate), Zoladex® (goserelin acetate),Viadur® (leuprolide acetate) and Eligard® (leuprolide acetate). The reduction in testosterone from ADT also results in very low estrogen levels in men, because estrogen is derived from testosterone in men.

Estrogen deficiency side effects associated with ADT include high risk of bone fractures, adverse lipid changes which may lead to higher risk of cardiovascular diseases, hot flashes, gynecomastia, depression, and memory loss. Increased risk of skeletal fractures is a significant clinical problem because clinical studies have shown that prostate cancer patients who develop skeletal fractures have 39 month shorter survival rates. Hot flashes occur because of reduced estrogen levels in the brain. Hot flashes experienced by prostate cancer patients on ADT tend to be severe, frequent and protracted and is the side effect most frequently mentioned by prostate cancer patients on ADT.

Based on the results of our Phase III clinical trial, our two Phase II clinical trials and our preclinical testing of toremifene 80 mg, as well as preclinical and clinical information known about toremifene, toremifene has shown estrogenic activity both in bone, which prevents bone fractures, and in the brain, which may reduce hot flashes. Toremifene has been shown to improve lipid profiles in postmenopausal women and, based on data received from our Phase III clinical trial, toremifene has been shown to improve lipid profiles in men with prostate cancer on ADT. Toremifene has also been shown to block estrogen's action in the male breast, which may prevent and treat gynecomastia. As a consequence, we believe that toremifene 80 mg has the potential to treat the following estrogen deficiency related side effects of LHRH agonists: bone fractures, hot flashes, adverse lipid changes and gynecomastia. Importantly, as evidenced by our two Phase II clinical trials and our Phase III clinical trial, toremifene has not been shown to stimulate prostate cancer growth or increase luteinizing hormone in men with prostate cancer on ADT.

Potential Market. In the United States, we believe that approximately 700,000 prostate cancer patients are currently being treated with ADT, and approximately 100,000 new patients are started on this therapy each year. An increasing number of prostate cancer patients are being treated by androgen deprivation with LHRH agonists earlier than in the past because of two main factors: first, medical studies have shown that early ADT prolongs the survival of prostate cancer patients, and second, the serum test for prostate specific antigen, or PSA, is detecting advanced prostate cancer earlier than in the past. The net effect of prostate cancer being treated sooner and for longer periods is that the estrogen deficiency related side effects of ADT have now been shown to contribute significantly to morbidity, and in some cases may lead to increased mortality. Physicians are currently prescribing certain drugs on an off-label basis to help ameliorate some of the specific estrogen deficiency related side effects of ADT. These drugs include bisphosphonates for osteoporosis, Megace® (megestrol acetate) and antidepressants for hot flashes and tamoxifen for gynecomastia. Radiation is also used to treat gynecomastia. Currently, no treatments have been approved by the FDA for the prevention of bone fractures and other estrogen deficiency side effects in men with prostate cancer on ADT.

Clinical Trials. In November 2003, we initiated a pivotal Phase III clinical trial of orally administered toremifene 80 mg dose in patients undergoing ADT for advanced, recurrent or metastatic prostate cancer under a SPA, with the FDA. We designed this pivotal Phase III clinical trial principally based on the results of our second Phase II clinical trial that evaluated patients who had been receiving LHRH agonists for more than 12 months. The primary endpoint of the trial was the reduction of new morphometric vertebral fractures measured by x-ray, and the secondary endpoints of the trial included BMD, hot flashes, lipid profile changes and gynecomastia. We reached our enrollment goal in the fall of 2005 and randomized approximately 1,400 patients into the trial with advanced, recurrent or metastatic prostate cancer who had been receiving ADT for at least six months and who had significant existing bone loss, or were greater than 70 years of age. The patients were randomized to receive either a placebo or

a daily 80 mg dose of toremifene for 24 months. We conducted the trial in approximately 150 sites in the United States and Mexico. In December 2005 and in accordance with the SPA, we completed a planned interim BMD analysis among the first 197 patients who completed one year of treatment. Patients treated with toremifene 80 mg demonstrated statistically significant increases in BMD compared to placebo in all three skeletal sites measured, with lumbar spine showing an improvement of 2.3 percentage points ($p<0.001$), hip, a 2.0 percentage point improvement ($p=0.001$), and femoral neck, a 1.5 percentage point improvement ($p=0.009$).

The last patient completed the ADT clinical trial in November 2007. In February 2008, we announced that the results of the Phase III clinical trial showed that toremifene 80 mg reduced new morphometric vertebral fractures, met other key estrogen deficiency endpoints of BMD, lipid profiles and gynecomastia, and also demonstrated a reduction in hot flashes in a subset of patients. In the modified intent to treat analysis which included all patients with at least one evaluable study radiograph and a minimum of one dose of study drug or placebo, toremifene 80 mg demonstrated a 50% reduction in new morphometric vertebral fractures ($p<0.05$; 5% fracture rate in the placebo group). The estimated two year fracture rate for new morphometric vertebral fractures in the placebo group was 6.2%. In an intent to treat analysis which included all patients randomized into the trial and who received a minimum of one dose of study drug, toremifene 80 mg demonstrated a 54% reduction in new morphometric vertebral fractures ($p=0.034$; 3.6% fracture rate in the placebo group). In prespecified subset analyses, in study patients who were greater than 80% treatment compliant, toremifene 80 mg reduced new morphometric vertebral fractures by 61% ($p=0.017$). When study patients who had greater than 7% bone loss at one year and new morphometric vertebral fractures were considered as treatment failures, toremifene 80 mg compared to placebo demonstrated a 56% reduction ($p=0.003$).

Patients treated with toremifene 80 mg compared to placebo demonstrated statistically significant increases in BMD in the lumbar spine, hip, and femur skeletal sites (each site demonstrating $p<0.0001$). Toremifene 80 mg treatment compared to placebo also resulted in a decrease in total cholesterol ($p=0.011$), LDL ($p=0.018$), and triglycerides ($p<0.0001$), and an increase in HDL ($p=0.001$). There were also statistically significant improvements in gynecomastia ($p=0.003$). In March 2008, we announced that in an analysis of hot flashes in a subset of patients in the toremifene 80 mg Phase III clinical trial experiencing six or more hot flashes per day at baseline and not being treated with megestrol acetate (Megace(R)), toremifene 80 mg treatment reduced the number of hot flashes by an average of 4.7 hot flashes per day compared to placebo patients who had a reduction of 1.6 hot flashes per day ($p=0.03$). The reduction of hot flashes in patients treated with toremifene 80 mg was durable for at least 12 months.

Toremifene 80 mg had a favorable safety profile and was well tolerated. Among the most common adverse events that occurred in over 2% of study subjects were joint pain (treated 7.3%, placebo 11.8%), dizziness (treated 6.3%, placebo 6.2%), back pain (treated 6.0%, placebo 5.2%), and extremity pain (treated 5.0%, placebo 4.4%). Venous thromboembolic events, or VTEs, which included both deep venous thrombosis and pulmonary embolism, were 17 (2.6%) in the toremifene 80 mg treated group and 7 (1.1 %) in the placebo group. The risk for VTE's was similar between the toremifene 80 mg treated group and the placebo group in the second year of treatment. The majority of VTEs occurred in men at high risk for a VTE (including: age greater than 80 years, history of VTEs, recent surgical procedure or immobilization). In men without major risk factors for VTE, there were 5 VTEs in the toremifene 80 mg treated group and 3 VTEs in the placebo group.

As part of our effort to complete the requirements for the submission of applications for regulatory approval of toremifene 80 mg, we have conducted a number of studies of toremifene in addition to our clinical trials, including a Thorough QT study, a bioequivalence study and a series of drug-drug interaction studies. The results of the Thorough QT study of 250 healthy male volunteers, with 5 parallel cohorts receiving 20 mg, 80 mg or 300 mg doses of toremifene, moxifloxacin, or placebo, showed that toremifene prolonged the QT interval in a dose dependent manner. The mean change in QTcB (a measurement of QT interval corrected by Bazett's formula) from baseline relative to placebo for toremifene 20 mg was 5.79 milliseconds, for toremifene 80 mg, it was 22.43 milliseconds, and for moxifloxacin, it was 8.83 milliseconds. Since we market FARESTON® in the United States under a license agreement with Orion, we notified the FDA of the Thorough QT study results and have proposed modifications to the FARESTON® label in the United States. FDA action on the proposed label changes is pending. Separately, Orion recommended label changes to the EMEA. In January 2009, the EMEA recommended that the FARESTON® label within the European Union reflect that toremifene should not be given to patients at risk of prolonged QT intervals or other certain heart problems. Our Thorough QT study was designed to better understand the risk of Torsades de Pointes, or Torsades, a rare and potentially fatal arrhythmia. The degree of QT interval prolongation is recognized as an imperfect surrogate marker for the risk of Torsades. Moreover, it is well established that not all

medicines which prolong QT will result in Torsades and Torsades can occur in the absence of QT prolongation. The post marketing pharmacovigilance database of approximately 480,000 patient years of use of toremifene at doses up to 240 mg in women, who are more sensitive to develop Torsades than are men, and the extensive clinical development programs in women and now in men, substantiate that there have been no reported cases of Torsades in patients taking toremifene. In our pivotal Phase III clinical trial, there was no increase in adverse events that have been associated with cardiac arrythmia in the toremifene group compared to placebo. The results of these completed studies have been included as a part of the NDA submission to the FDA for our toremifene 80 mg product candidate for the prevention of bone fractures in men with prostate cancer on ADT and, subject to receipt of favorable results from our ongoing toremifene 20 mg Phase III clinical trial, will be included as a part of the NDA submission for our toremifene 20 mg product candidate for the prevention of prostate cancer in high risk men with high grade PIN, and will be used to update the label for FARESTON®. The study results could lead to the inclusion of restrictions, limitations and/or warnings in the label of FARESTON® or an approved product candidate, which may adversely affect the marketability of the product or limit the patients to whom the product is prescribed.

NDA Filing. In December 2008, we submitted a NDA for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT, which has been accepted for filing and review by the FDA.

Toremifene 20 mg for the Prevention of Prostate Cancer in High Risk Men with High Grade PIN

Scientific Overview. Patients who have an abnormal serum PSA test, a prostate cancer blood test that is commonly administered to men as part of physical examinations, or an abnormal digital rectal examination routinely undergo a prostate biopsy to determine whether they have prostate cancer. Precancerous prostate lesions known as high grade PIN, rather than prostate cancer, are detected in approximately 15% of the patients who undergo prostate biopsies. Over the last 17 years, scientific evidence has established that men who have high grade PIN are at high risk for developing prostate cancer. We believe that more than 40% of these men will progress to prostate cancer within three years. We believe that this strong correlation between high grade PIN and prostate cancer makes these men an appropriate population to treat to prevent prostate cancer. Currently, there is no approved treatment to prevent prostate cancer in men who are diagnosed with high grade PIN.

Testosterone and estrogens together are important for the initiation of prostate cancer. Estrogens may promote the development of prostate cancer by stimulating high grade PIN and causing it to progress into prostate cancer. Estrogen receptors are found in the normal prostate and in high grade PIN lesions. In animal models of prostate cancer, blocking estrogens' action has been shown to reduce the incidence of prostate cancer. Because toremifene blocks estrogen receptors in the prostate, we believe that it has the potential to reduce the incidence of prostate cancer in high risk men with high grade PIN.

Potential Market. In the United States, prostate cancer is one of the most commonly diagnosed cancers and the second leading cause of cancer-related deaths in men. There are approximately 186,000 new cases of prostate cancer diagnosed each year and 29,000 prostate cancer deaths annually in the United States. In addition, in the United States, there are over 115,000 new cases of high grade PIN diagnosed each year, with an estimated 14 million men under the age of 80 who unknowingly harbor high grade PIN.

Patients who are diagnosed with high grade PIN may undergo repeat biopsies following the diagnosis in order to detect the progression of high grade PIN into prostate cancer. Prostate biopsies are performed through an ultrasound probe placed in the rectum. Hollow needles are then inserted through the probe through the rectum into the prostate to obtain sample cores of tissue. Complications from this procedure include bleeding, pain, prostate infection and, in rare instances, life-threatening blood infection (sepsis). Because the prostate biopsy technique randomly samples the prostate gland with a relatively thin needle, both prostate cancer and high grade PIN may be missed by the biopsy. Patients with high grade PIN are exposed to the potential complications and the discomfort of invasive, repeat prostate biopsies and are subject to the mental anguish of fearing that a diagnosis of prostate cancer may be imminent.

We have entered into separate collaboration agreements with diagnostic companies, including Hybritech, Inc., a wholly owned subsidiary of Beckman Coulter, Inc., MacroArray Technologies, LLC, and Gen-Probe, Inc., to provide clinical samples to these companies from our Phase IIb clinical trial and/or our ongoing Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN. Information resulting from these collaborations will be used to evaluate whether a commercial test using blood or urine may be

effectively developed to detect high grade PIN and/or prostate cancer. By continuing to collaborate with leading diagnostic labs, we hope to have a urine or blood test developed to detect high grade PIN in the millions of American men who may unknowingly harbor high grade PIN and/or prostate cancer.

Clinical Trials. In 2004, we completed a randomized, double blind, placebo controlled, dose finding Phase IIb clinical trial of toremifene in men diagnosed with high grade PIN to determine the efficacy and safety of a daily dose of toremifene for 12 months. The trial enrolled 514 men and was conducted at 64 clinical sites across the United States. The primary efficacy endpoint of this trial was incidence of prostate cancer at 12 months. Participants were randomized to receive a 20 mg, 40 mg or 60 mg dose of toremifene or placebo. A screening prostate biopsy was performed on each trial participant before enrollment into the trial, and eligibility was limited to participants who were diagnosed with high grade PIN and had no evidence of prostate cancer. A second biopsy was performed six months after enrollment in an effort to identify trial participants who had prostate cancer that was not detected by the initial biopsy. The intent to treat population consisted of all patients initially enrolled in the trial who returned for their six-month biopsy. We also analyzed trial results in a predefined subgroup of patients that excluded patients showing biopsy evidence of prostate cancer at six months and patients who did not complete the full course of therapy in the trial (completer's analysis).

We analyzed the results of this Phase IIb clinical trial on a stratified basis, in which we assessed the effect of individual clinical sites on the overall statistical analysis of the trial results, and on an unstratified basis, in which we did not assess such effect. In the stratified analysis of the per protocol population, which is the intent to treat population less two patients in the group that received 20 mg of toremifene who were deemed to be not compliant with the protocol, the cumulative, or overall, risk of prostate cancer was 24.4% in the group that received 20 mg of toremifene compared with 31.2% in the group that received placebo. The p-value for this result was less than 0.05. Thus, the cumulative risk of prostate cancer based on a stratified analysis of the per protocol population was 22.0% lower in the 20 mg treatment group, which would imply an annualized rate of prevention of cancers of 6.8 per 100 men treated. The p-value in the unstratified analysis of the per protocol population for the comparison between the group that received 20 mg of toremifene and the group that received placebo was 0.132. In the stratified analysis of the intent to treat population, the cumulative risk of prostate cancer was 24.9% in the group that received 20 mg of toremifene compared with 31.2% in the group that received placebo. The p-value for this result was 0.081, which was statistically significant under the protocol for this trial. Statistical significance under the protocol was defined as a p-value of 0.10 or less. The p-value in the unstratified analysis of the intent to treat population for the comparison between the group that received 20 mg of toremifene and the group that received placebo was 0.148.

In a stratified analysis of the subgroup of patients who had no biopsy evidence of prostate cancer at their initial screening biopsy or their six-month biopsy and completed the full course of therapy in the trial, the cumulative risk of prostate cancer was 9.1% in the group that received 20 mg of toremifene compared with 17.4% in the group that received placebo, a 48.2% reduction. The p-value for this result was less than 0.05. For the 40 mg and 60 mg treatment arms, in the intent to treat population, the per protocol population and the predefined patient subgroup, the cumulative risk of cancer was lower than the placebo group, although these results were not statistically significant.

The overall rates of drug-related adverse events and serious adverse events did not differ to a significant degree between any of the toremifene dose groups and placebo. The results of our pivotal Phase III clinical trial of toremifene 20 mg for this indication may not be the same as the results of this Phase IIb clinical trial.

In January 2005, we initiated a randomized, double blind, placebo controlled pivotal Phase III clinical trial of orally administered toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, which is being conducted under a SPA with the FDA. Approximately 130 clinical sites across the United States and Canada are participating in this trial. We have randomized a total of 1,590 patients into the trial, 330 patients above our enrollment goal of 1,260 patients. These additional patients are also participating in bone and ocular substudies requested by the FDA under the SPA. A planned efficacy interim analysis was conducted in the second quarter of 2008 which did not reach the specified statistical outcome of $p<0.003$ required under the SPA. We anticipate conducting a planned efficacy analysis after a certain number of additional cancer events have been recorded among study patients, which we currently expect to occur in the summer of 2009. If the efficacy analysis achieves a prespecified statistical goal, we plan to submit a NDA to the FDA. If we are able to submit a NDA based on the results of the planned efficacy analysis, we will continue the study to collect efficacy data and safety data during the NDA review process to satisfy the FDA's safety requirements set forth in the SPA. If the results from the efficacy

analysis do not satisfy the specified statistical requirements, we will make a final determination about the continuation of the toremifene 20 mg Phase III clinical trial.

A Data Safety Monitoring Board, or DSMB, meets every six months to review unblinded data from the toremifene 20 mg Phase III clinical trial. In February 2009, an independent DSMB conducted a planned, semi-annual review of unblinded safety data from the 1,590 patients participating in the toremifene 20 mg Phase III high grade PIN clinical trial and recommended the clinical trial continue as planned.

SARMs

We and Merck have entered into a global strategic collaboration to discover and develop SARMs, a new class of drugs with the potential to treat sarcopenia, which is the loss of skeletal muscle mass resulting in reduced physical strength and ability to perform activities of daily living, cancer cachexia (cancer induced muscle loss), and other musculoskeletal wasting or muscle loss conditions.

Ostarine™ for the Treatment of Cancer Cachexia

Scientific Overview. Cancer cachexia is defined as the unintentional loss of lean body mass or muscle. Cancer causes the body to go into a starvation-like state that results in the preferential loss of muscle. Loss of muscle may lead to weakness, fatigue, diminished response and greater toxicity to chemotherapy, and in some cases, death. Approximately one-third of newly-diagnosed cancer patients have cancer cachexia which accounts for approximately 20% of cancer deaths. Weight loss is one of the most important indicators of how long a cancer patient will live since the survival of a patient with cancer is greatly impacted by the degree and rate of muscle loss. A greater lean body weight may increase strength, activity levels, quality of life, response to chemotherapy and, ultimately, survival.

Testosterone increases lean body weight in both men and women. One of the causes of cancer cachexia may be reduced levels of testosterone. Testosterone therapy, however, is not used for the treatment of cancer cachexia for two reasons. First, the available delivery methods for testosterone may not be convenient for patients, and second, testosterone can have a number of undesirable side effects in men, such as the potential stimulation of latent prostate cancer, aggravation of existing BPH and gynecomastia, and in women, masculinizing effects such as acne and facial hair.

Ostarine™ is an oral nonsteroidal agent designed to have anabolic activity on muscle and bone without unwanted side effects on prostate and skin. We believe that Ostarine™ is similar to testosterone in activating androgen receptors in muscle, thereby promoting lean body weight, but does not stimulate sebaceous glands, the cause of hair growth and acne, or the prostate, which may exacerbate BPH or stimulate prostate cancer. In addition, Ostarine™ is being developed in an oral dosage form, which patients may find is more convenient to take.

Potential Market. There are approximately 1.4 million patients diagnosed with cancer each year in the United States. It has been estimated that cancer cachexia afflicts approximately 410,000 patients. The prevalence of precachexia at-risk patients is 2.9 million. Over 30 clinical trials of supplemental nutritional support alone have reported little or no benefit in counteracting cachexia in cancer patients receiving chemotherapy or radiation. There are no drugs that have been approved by the FDA for the treatment of cancer cachexia. Although there are two commercially available anabolic steroids being prescribed off-label for the treatment of cancer cachexia, chronic use of these drugs may result in liver toxicity. Also, Megace®, an appetite stimulant which has been used off-label for cancer patients, has not been shown to increase lean body mass in spite of increasing appetite.

Clinical Trials. We have clinical data from two Phase I clinical trials and two Phase II clinical trials of Ostarine™. In our first Phase I clinical trial, a double blind, placebo controlled, single ascending dose study in 96 healthy male volunteers, Ostarine™ was well tolerated and there were no drug-related serious adverse events. This clinical trial demonstrated that the half life of Ostarine™ was approximately 24 hours.

The second Phase I clinical trial was a double blind multiple ascending dose 14 day study to evaluate the safety, tolerability, pharmacokinetics, and specific pharmacodynamic characteristics of Ostarine™ in 48 healthy male volunteers between 18 and 45 years of age and 23 elderly males with an average age of 68 years. Measurements included routine blood chemistry and hematology, sex hormones and gonadotropins, serum prostate specific antigen,

metabolic markers of bone and muscle, cutaneous sebum analysis and DEXA scanning for body composition. Overall, clinical laboratory values and hormonal effects for the 71 volunteers were consistent with anabolic activity. Comparisons of DEXA assessments from the beginning of the study to DEXA assessments after 14 days showed positive changes in body composition at clinically relevant doses; increases in lean body mass and decreases in fat mass were observed. Ostarine™ did not appear to have unwanted side effects on the prostate (serum PSA) or the skin (sebum analysis). Ostarine™ was well tolerated with no drug-related serious adverse events. However, Phase I clinical trials are not designed to show efficacy, and the results of future clinical trials may not be the same as these early observations.

In May 2006, we initiated a Phase II proof of concept, double blind, randomized, dose finding placebo controlled clinical trial in 60 elderly men and 60 postmenopausal women. The trial was designed to evaluate Ostarine™ treatment in building muscle, as well as to assess safety in both elderly men and postmenopausal women. Enrollment was completed in July 2006, and in December 2006, we reported the topline results. Without a prescribed diet or exercise regimen, all subjects treated with Ostarine™ had dose dependent increases in the primary endpoint total lean body mass. Treatment with Ostarine™ also resulted in a dose dependent improvement in functional performance, a secondary endpoint, measured by a stair climb test. Ostarine™ had a favorable safety profile, with no serious adverse events reported. Ostarine™ also exhibited tissue selectivity with beneficial effects on lean body mass and performance and with no apparent change in measurements of serum PSA, sebum production, or serum LH.

In July 2007, we initiated a Phase II randomized, double blind, placebo controlled clinical trial evaluating Ostarine™ for the treatment of cancer cachexia in 159 patients diagnosed with non-small cell lung cancer, colorectal cancer, non-Hodgkin's lymphoma, chronic lymphocytic leukemia, or breast cancer. In October 2008, we announced topline results of this clinical trial. In this analysis, the study met its primary endpoint of absolute change in total lean body mass (muscle) compared to placebo and the secondary endpoint of muscle function (performance) after 16 weeks of treatment in 159 cancer patients with reported weight loss. In 2009, we and Merck expect to initiate a clinical trial evaluating Ostarine™ in cancer cachexia.

SARMs for the Treatment of Sarcopenia

Scientific Overview. Every year after age 30, people lose on average a half pound of muscle and gain a pound of fat. A typical man may lose 35% of muscle between the ages of 20 and 80 years of age. A contributing factor to muscle loss in men is that testosterone levels decrease by 1% every year after the age of 30 years. Muscle plays several important roles: muscle provides strength and endurance, supports the skeletal system, plays an important role in metabolism, and helps protect the body by providing protein for the immune system. During an illness or trauma to the body, the energy demands of the body increase, and the body breaks down muscle to get protein to fuel the body's needs, to repair damaged organs, and to replenish immune system cells. As people lose muscle, they become fatigued more easily, making it more difficult for them to rehabilitate and recover. Loss of muscle can cause frailty, loss of independence and can worsen other conditions of aging such as osteoarthritis and osteoporosis. People who are fatigued may become more sedentary, which can lead to a reduction in their quality of life. Loss of muscle and bone with age is sometimes referred to as frailty whereas loss of bone only is referred to as osteoporosis. A 2001 study among more than 5,000 elderly adults found that over a three-year period the death rate among the frail elderly was 18%, versus a 3% mortality rate in the non-frail elderly. The frail were also far more likely to experience falls, hospitalizations and loss of independence.

We believe that SARMs can build muscle and bone by improving: (1) the body's efficiency at metabolizing protein from food, (2) the body's ability to recycle protein, (3) the body's ability to burn fat and build muscle and (4) the body's ability to maintain and promote bone. We believe that SARMs can increase muscle size and strength, resulting in improved function, quality of life and speed of recovery, and can prevent osteoporosis and bone fractures. SARMs have been designed to have anabolic properties in muscle and bone without unwanted side effects, such as the stimulation of prostate cancer in men and masculinization in women. In preclinical studies of intact animals, SARMs have been shown to build muscle and bone while shrinking the prostate.

Potential Market. There are approximately 17.5 million people over the age of 65 in the United States who have age related loss of muscle mass. In the United States in 2006, there were approximately 13.1 million hospital discharges among the 35 million people over the age of 65 years. It has been shown that from the time of the onset of their illness, approximately 50% of the elderly declined in health after their hospital stay. Muscle loss is a

contributing factor in their inability to completely recover. Current anabolic agents available in the market may be experiencing limited acceptance by patients due to concerns about their potential undesirable side effects, and inconvenient dosing. Testosterone is not available as an oral tablet in the United States and topical gels and patches are the most utilized forms of delivery for testosterone currently.

Clinical Trials. We and Merck are conducting an ongoing Phase II clinical trial evaluating MK-0773, a SARM, in sarcopenia, which we expect to complete in 2009.

LH Inhibitor

GTx-758 for the Treatment of Advanced Prostate Cancer

Scientific Overview. GTx-758 is an oral luteinizing hormone, or LH, inhibitor which we are developing for first line treatment of advanced prostate cancer. In animal models, GTx-758 rapidly suppresses secretion of LH by feedback inhibition on the pituitary, inhibiting the production of androgens by the testes.

ADT is the most common treatment for patients who have advanced prostate cancer. ADT reduces testosterone, a primary growth factor for prostate cancer, to castrate levels. ADT is accomplished either surgically by removal of the testes or chemically by LHRH therapy. LHRH agents work by shutting off LH secretion by the pituitary gland thereby stopping testosterone production by the testes. The reduction in testosterone by ADT also results in very low estrogen levels in men, because estrogen is derived from testosterone in men. Estrogen deficiency side effects associated with LHRH therapies may include bone loss and bone fractures, adverse lipid changes, hot flashes, gynecomastia and impaired cognitive function. Increased risk of skeletal fractures is a significant clinical problem because clinical studies have shown that median survival in prostate cancer patients who develop skeletal fractures is reduced by 39 months.

In preclinical *in vitro* and *in vivo* models, GTx-758 has demonstrated the potential to reduce testosterone to castrate levels without causing certain estrogen deficiency side effects such as bone loss and hot flashes.

Potential Market. In the United States, we believe that approximately 700,000 prostate cancer patients are currently being treated with ADT, and approximately 100,000 new patients are started on this therapy each year. An increasing number of prostate cancer patients are being treated by androgen deprivation with LHRH agonists. In 2008, the annual US sales of drugs for androgen deprivation therapy, which include currently marketed LHRH agonists, were approximately $1.7 billion.

Clinical Trials. We have initiated a Phase I clinical trial evaluating GTx-758 in healthy volunteers in the first quarter of 2009. The Phase I study will evaluate the safety, tolerability and pharmacokinetic profile of GTx-758 using a single ascending dose, double blind, placebo controlled design in healthy male volunteers. We further expect to establish proof of concept for GTx-758 with a Phase I multiple ascending dose clinical trial that we are planning to initiate in the second quarter of 2009 and conclude in the fourth quarter of 2009.

Drug Discovery and Other Research and Development

Steroid hormone therapies, which include estrogen and testosterone therapies, have been used to treat humans for many years. Steroid hormones by their nature have unselective effects in various tissues. As a result, they have unintended side effects, which limit their clinical value.

SERM-based drugs, such as toremifene, tamoxifen and raloxifene, have achieved commercial success in treating women as nonsteroidal small molecules that modulate hormone estrogen receptors in a tissue selective way and minimize some of the side effects of the natural estrogen hormone to treat breast cancer (toremifene and tamoxifen) or to treat postmenopausal osteoporosis (raloxifene). We believe that the previous commercial and scientific success of SERMs indicates that it is possible to design and develop classes of nonsteroidal small molecule drugs to modulate hormone receptors in addition to estrogen receptors.

We have an extensive preclinical pipeline generated from our own discovery program, including GTx-878, which is an estrogen receptor beta agonist that is currently in preclinical development for the potential treatment of

ophthalmic, prostatic, or inflammatory diseases. In preclinical models, GTx-878 has demonstrated the potential to inhibit prostate growth, relax urethral smooth muscle tone, prevent angiogenesis, protect from oxidative stress and affect body composition.

We believe that our drug discovery expertise will allow us to sustain our clinical pipeline through the design and development of nonsteroidal small molecule drugs that selectively modulate hormone receptors. Our in-house medicinal chemists and scientists provide us with significant discovery and development expertise. Using our capabilities in hormone receptor biology and medicinal chemistry, we are able to target many hormone receptors and generate compounds that are designed to address the shortcomings of natural hormone therapies.

We design and synthesize new compounds based on computer, or *in silico,* models and crystal structures of a hormone receptor's binding sites. We continually modify and improve these models to reflect our study of the activity of new compounds in the laboratory, in which we determine the link between chemical structures and biological activity, or structure-activity relationships.

We also have significant medicinal scale-up and high throughput capabilities, which facilitate our rapid synthesis and evaluation of new compounds. Throughout our discovery process, we build diversity into our chemistry structures in order to improve our likelihood of success in developing novel compounds that have the potential to treat multiple indications. Through this approach, we have generated clinical product candidates for the androgen receptor such as Ostarine™, a nuclear hormone receptor modulator. We also have conducted research and development efforts focused on other SERM and SARM compounds, other hormone receptor modulator compounds and anticancer agents.

Our Strategy

Our objective is to discover, develop and commercialize small molecules that selectively target hormone pathways to treat cancer, osteoporosis and bone loss, muscle loss and other serious medical conditions. Key elements of our strategy to achieve this objective are to:

Obtain Regulatory Approvals of Toremifene 80 mg and Toremifene 20 mg. We have completed our Phase III clinical trial of toremifene 80 mg to prevent bone fractures and treat other estrogen deficiency side effects in men with prostate cancer on ADT, which was conducted under a SPA, and submitted a NDA to the FDA in December 2008 for the prevention of bone fractures in men with prostate cancer on ADT. In addition, we are conducting our Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN under a SPA with the FDA. We are focused on obtaining regulatory approval and preparing for the potential commercial launch of toremifene 80 mg.

Commercialize Toremifene 80 mg and Toremifene 20 mg in the United States and Establish a Sales and Marketing Infrastructure. We have licensed from Orion the commercial rights to toremifene in the United States. We believe that, if approved, we can effectively market toremifene to urologists and medical oncologists in the United States through a specialty sales force that we plan to build.

Partner Commercial Rights to Toremifene in Europe, Asia and the Rest of the World. In September 2006, we licensed to Ipsen exclusive rights in the European Territory to develop and commercialize toremifene in all indications which we have licensed from Orion. We are currently pursuing a similar partnership for toremifene in Asia and other markets outside of the United States and Europe. We and Ipsen also intend to apply for market exclusivity and regulatory extensions of patent life under applicable European and U.S. laws, as appropriate, to protect our exclusive rights in toremifene for the indications that we are currently testing in clinical trials.

Develop Diagnostic Tests for High Grade PIN. We are currently collaborating with several diagnostics companies, including Hybritech, Inc., a wholly owned subsidiary of Beckman Coulter, Inc., MacroArray Technologies, LLC, and Gen-Probe, Incorporated to develop an accurate blood or urine test to detect high grade PIN. We will continue to seek additional collaborations with other companies with promising high grade PIN diagnostics. We believe that men would be more willing to be tested for high grade PIN if the diagnostic test were less invasive than a prostate biopsy. In February 2007, MacroArray Technologies reported in *Clinical Cancer Research* the development of a urine test to non-invasively detect high grade PIN. Given the large number of

patients with undiagnosed high grade PIN, we believe that the development of a blood or urine test would increase the detection of high grade PIN and thereby expand the already large potential market for toremifene 20 mg.

Pursue Clinical Development of SARMs with Merck. In December 2007, we and Merck formed a global strategic collaboration for the discovery, development and commercialization of SARMs. We and Merck have pooled our programs and compounds and intend to work together to discover, develop and commercialize current, as well as future SARMs.

Build Upon Our Other Drug Discovery Capabilities to Sustain Our Small Molecule Product Candidate Pipeline to Selectively Target Hormone Pathways. While our clinical development efforts to date have focused on SERM and SARM technologies, we have the capability to discover and develop additional drug candidates that target other hormone receptors. We intend to develop new molecules to treat diseases that affect large numbers of patients and are underserved by available alternatives or for which there are no current alternatives. We have initiated a Phase I clinical trial evaluating GTx-758, an oral LH inhibitor for advanced prostate cancer, in healthy volunteers in the first quarter of 2009. We further expect to establish proof of concept for GTx-758 with a Phase I multiple ascending dose clinical trial which we are planning to initiate in the second quarter and conclude in the fourth quarter of 2009.

Maintain Commercial Sales of FARESTON®. We intend to continue to market FARESTON® in the United States.

Licenses and Collaborative Relationships

In addition to our internally-developed and discovered small molecules, we have established and intend to continue to pursue licenses from and collaborative relationships with pharmaceutical companies and academic institutions to further the development and commercialization of our small molecule product candidates.

Merck & Co., Inc.

In December 2007, we and Merck entered into a global exclusive license and collaboration agreement governing our and Merck's joint research, development and commercialization of SARM compounds and related SARM products, including SARMs currently being developed by us and Merck and those yet to be discovered, for all potential indications of interest.

Under the agreement, we granted Merck an exclusive worldwide license under our SARM-related patents and know-how. We are conducting preclinical research of SARM compounds and products, and Merck is primarily responsible for conducting and funding development and commercialization of products developed under the agreement. Merck paid us an upfront licensing fee of $40.0 million, which was received in January 2008. In addition, Merck has agreed to pay us $15.0 million in guaranteed cost reimbursements for research and development activities in equal annual installments over a three year period beginning on the first anniversary of the effective date of the agreement. In December 2008, we received $5.0 million from Merck as the first of the three annual installment payments. We are also eligible to receive under the agreement up to $422.0 million in future milestone payments associated with the development and regulatory approval of a lead product candidate, including Ostarine™, as defined in the agreement, if multiple indications are developed and receive required regulatory approvals, as well as additional milestone payments for the development and regulatory approval of other product candidates developed under the agreement. Merck has also agreed to pay us tiered royalties on net sales of products that may be developed under the agreement. We are responsible for any payments owed to the University of Tennessee Research Foundation, or UTRF, resulting from the agreement. On the date the agreement became effective in December 2007, we issued Merck 1,285,347 newly issued shares of our common stock for an aggregate purchase price of approximately $30.0 million.

Unless terminated earlier, the agreement will remain in effect in each country of sale at least until the expiration of all valid claims of the licensed patents in such country. However, Merck may terminate the agreement at its election at any time after a specified period of time following the effectiveness of the agreement, and either party may terminate the agreement at any time for the other party's uncured material breach or bankruptcy. Under certain conditions, Merck will continue to owe royalties on certain products after it terminates the agreement without cause.

Ipsen Group

In September 2006, we entered into a collaboration and license agreement with Ipsen pursuant to which we granted Ipsen exclusive rights in the European Territory to develop and commercialize toremifene in all indications which we have licensed from Orion, which include all indications in humans except the treatment and prevention of breast cancer outside the United States. In the agreement, both parties have agreed that neither party will seek to commercialize, promote, market or sell certain products within the European Territory for an agreed upon period of time subsequent to the time of the first commercial launch of toremifene within the European Territory. We and Ipsen have also granted to each other a right of first negotiation with respect to the development, marketing, sale and distribution of any new SERM-based products for the field of the prevention and treatment of prostate cancer or related side effects, or any other indication the parties may agree on.

In accordance with the terms of the agreement, Ipsen agreed to pay us €23.0 million as a license fee and expense reimbursement, of which €1.5 million is being paid in equal installments over a three year period from the date of the agreement. In October 2006, we received €21.5 million (approximately $27.1 million) from Ipsen as the initial payment for the license fee and expense reimbursement. In September 2007, we received €500,000 (approximately $688,000) from Ipsen as the first annual installment payment. The second annual installment payment of €500,000 (approximately $711,000) was received from Ipsen in September 2008. Pursuant to the agreement, we are also entitled to receive from Ipsen up to an aggregate of €39.0 million in milestone payments depending on the successful development and launch of toremifene in certain countries of the European Territory for the high grade PIN indication, subject to certain conditions, and the ADT indication. In February 2008, we earned a milestone of €1.0 million (approximately $1.5 million) with the achievement of the primary endpoint in the toremifene 80 mg ADT Phase III clinical trial. This amount was recognized as collaboration revenue for the year ended December 31, 2008.

Ipsen has agreed to be responsible for and to pay for all clinical development, regulatory and launch activities to commercialize toremifene in the European Territory for both the high grade PIN indication and ADT indication. We will remain similarly responsible for all development and regulatory activities outside of the European Territory. However, Ipsen has agreed to pay a portion of our toremifene development costs in the United States if certain conditions are met. Under the agreement, Ipsen must elect to retain its rights to commercialize toremifene and other products containing toremifene for the high grade PIN indication. Until such time as Ipsen shall make its election, however, it is required to initiate and carry out the development of toremifene for the high grade PIN indication in the European Territory and to pay all costs associated therewith. Depending on when Ipsen exercises this election, Ipsen may be required to pay an additional license fee as well as a premium on its share of the development and clinical trial expenses incurred by us in the United States since January 1, 2006, on account of toremifene for high grade PIN. If Ipsen does not exercise its election within a certain period, Ipsen will not be obligated to pay us for a portion of the development and clinical trial expenses incurred by us in the United States since January 1, 2006, on account of toremifene for the high grade PIN indication, and we may elect to terminate Ipsen's rights to commercialize toremifene-based products for this indication, in which event all of Ipsen's rights to toremifene for the high grade PIN indication (including all associated clinical trial data and regulatory filings and approvals) will revert to us. Ipsen has agreed to pay us a royalty equal to a graduating percentage of aggregate net sales of products containing toremifene in the mid-teens, which could reach the mid-twenties based on certain sales price thresholds being met, and which rates will be dependent on whether such sales are for the high grade PIN indication or the ADT indication. We are responsible for paying upstream royalties on toremifene to both Orion and UTRF for the PIN indication and to Orion only for the ADT indication. Ipsen will purchase the bulk drug product supply directly from Orion and is responsible for the packaging and labeling of the final product.

Orion Corporation

In March 2000, we entered into a license and supply agreement with Orion to develop and commercialize products containing toremifene. Our rights under the original license agreement were limited to specific disease fields pertaining to prostate cancer. In December 2004, we entered into an agreement with Orion to purchase specified FARESTON® related assets which Orion had re-acquired from another licensee. We also entered into an amended and restated license and supply agreement with Orion which replaced the original license agreement. We paid Orion approximately $5.2 million under the 2004 agreements for the assets and related license rights.

Under the amended and restated license and supply agreement, we obtained an exclusive license from Orion to develop and commercialize toremifene-based products for all human indications worldwide, except breast cancer outside of the United States. We are required to pay Orion a royalty on sales by us and our affiliates of FARESTON® for breast cancer in the United States. We are also required to pay Orion a royalty on sales by us, our affiliates and third-party sublicensees of other toremifene-based products, including toremifene 80 mg and toremifene 20 mg if approved for commercial sale. Our license and supply agreement with Orion requires that Orion will manufacture and supply all of our and our sublicensees' needs for clinical trial and commercial grade material for toremifene-based products developed and marketed in the United States and abroad, including toremifene globally and FARESTON® in the United States. Orion may terminate its supply obligations under specified circumstances. However, we have specified rights to assume manufacture of toremifene if Orion terminates its supply of toremifene because it has ceased to manufacture toremifene, although we would have to engage another supplier to do so. The term of the amended and restated license and supply agreement lasts, on a country-by-country basis, until the later of expiration of our own patents claiming the method of use or manufacture of toremifene for prostate cancer or the end of all marketing or regulatory exclusivity which we may obtain for toremifene-based products. Orion may terminate the agreement as a result of our uncured material breach or bankruptcy.

University of Tennessee Research Foundation

In July 2007, we and UTRF entered into a Consolidated, Amended and Restated License Agreement, or the SARM Agreement, to consolidate and replace our two previously existing SARM license agreements with UTRF and to modify and expand certain rights and obligations of each of the parties under both license agreements. Pursuant to the SARM Agreement, we were granted exclusive worldwide rights in all existing SARM technologies owned or controlled by UTRF, including all improvements thereto, and exclusive rights to future SARM technology that may be developed by certain scientists at the University of Tennessee or subsequently licensed to UTRF under certain existing inter-institutional agreements with The Ohio State University. Unless terminated earlier, the term of the SARM Agreement will continue for the longer of 20 years or until the expiration of the last valid claim of any licensed patent in the particular country in which a licensed product is being sold. UTRF may terminate the SARM Agreement for our uncured breach or upon our bankruptcy.

In September 2007, we and UTRF entered into an Amended and Restated License Agreement, or the SERM Agreement, to replace our previously existing exclusive worldwide license agreement for toremifene. Pursuant to the SERM Agreement, we were granted exclusive worldwide rights to UTRF's method of use patents relating to SERMs, including toremifene for chemoprevention of prostate cancer as well as future related SERM technologies that may be developed by certain scientists at the University of Tennessee. Unless terminated earlier, the term of the SERM Agreement will continue in a particular country for the longer of 20 years from the effective date of our previously existing exclusive worldwide license agreement with UTRF for toremifene or until the expiration of the last valid claim of any licensed patent in such country. UTRF may terminate the SERM Agreement for our uncured breach or upon our bankruptcy.

Under these agreements with UTRF, we agreed to pay to UTRF a one-time, upfront fee of $290,000 per agreement as consideration for entering into the agreements. We are also obligated to pay UTRF annual license maintenance fees and royalties on sublicense revenues and net sales of products. We also agreed to pay all expenses to file, prosecute and maintain the patents relating to the licensed SARM and SERM technologies, and are obligated to use commercially reasonable efforts to develop and commercialize products based on the licensed SARM and SERM technologies.

In December 2008, we and UTRF amended the SARM Agreement and the SERM Agreement to, among other things, clarify the treatment of certain payments that we may receive from our current and future sublicensees for purposes of determining sublicense fees payable to UTRF, including the treatment of payments made to us in exchange for the sale of our securities in connection with sublicensing arrangements. In consideration for the execution of the amendments, we agreed to pay UTRF an aggregate of $540,000. In connection with the execution of the amendments, we and UTRF dismissed our respective claims and actions relating to the sale of our common stock to Merck in December 2007.

Ortho Biotech

In March 2004, we entered into a joint collaboration and license agreement with Ortho Biotech Products, L.P., a subsidiary of Johnson & Johnson, for andarine, one of our proprietary SARM compounds, and specified backup SARM compounds. Under the terms of the agreement, we received in April 2004 an upfront licensing fee and expense reimbursement totaling $6.7 million. The upfront licensing fee and expense reimbursement were deferred and amortized into revenue on a straight-line basis over the estimated five year andarine development period. In December 2006, we reacquired full rights to develop and commercialize andarine and all backup compounds previously licensed to Ortho Biotech, and the joint collaboration and license agreement was terminated by mutual agreement of the parties. In connection with the termination of the Ortho Biotech agreement, we recognized the associated $3.1 million balance of deferred revenue as additional collaboration revenue in 2006.

Manufacturing

We do not currently own or operate manufacturing facilities for the production of clinical or commercial quantities of FARESTON®, toremifene or any of our SARMs. We currently rely and expect to continue to rely on third parties for the manufacture of our product candidates or products that we may develop.

We have agreed to purchase from Orion our worldwide requirements for toremifene under an exclusive license and supply agreement providing for Orion to supply our requirements for clinical and commercial product. Orion has agreed to supply us with, and we have agreed to purchase from Orion, our worldwide requirements of toremifene citrate in specified doses in finished tablet form at specified prices. Similarly, Ipsen has agreed to purchase from Orion, toremifene tablets for clinical testing and commercial sale in the European Territory under an amended supply agreement with Orion. As such, both we and Ipsen rely on Orion as the single source supplier of toremifene. Orion's manufacturing facility also produces commercial quantities of toremifene tablets for FARESTON® and complies with the FDA's current Good Manufacturing Practice regulations. The raw materials necessary to manufacture toremifene citrate tablets are readily available, but Orion is our only supplier of toremifene tablets. Our license and supply agreement with Orion does not provide us with the current right to manufacture toremifene. In addition, under the terms of our agreement with Orion, we have agreed to purchase our requirements for toremifene tablets from Orion during the term of the agreement, which extends for the life of our patent rights, beyond the term of Orion's patents with respect to the composition of matter of toremifene.

Orion may terminate its obligation to supply us and Ipsen with toremifene if Orion permanently ceases the manufacture of toremifene subject to giving us and Ipsen proper notice or Orion may terminate its obligation to supply us with toremifene if marketing approval for toremifene for use in any of the licensed fields, except breast cancer, is not granted in the United States prior to December 31, 2009. There are a number of circumstances in which Orion is required to grant manufacturing rights to us and Ipsen, including following termination of its supply obligation as set forth above, failure by Orion to supply product to us for 90 days or to supply product in dosages or formulations other than the dosages and formulations specified in the agreement or termination of the agreement by us following a breach by Orion. Also, under certain circumstances, if additional manufacturing capacity is needed to supply our increasing need for product, we have the right at certain sales levels to require Orion to qualify an additional manufacturing site at our expense. Under these circumstances, we and Ipsen would need to make arrangements for an alternative supply which would still have to be made with a qualified alternative supplier with the appropriate FDA approval in order for us to obtain our supply requirements for toremifene. However, in the event that Orion terminates the license agreement as a result of our bankruptcy or a material breach of the agreement by us that is not cured, we would not have the right to manufacture toremifene until Orion's patents with respect to the composition of matter of toremifene expire in the United States. Although Orion's composition of matter patents within the European Territory have expired, and as such, would not prevent Ipsen from manufacturing toremifene within the European Territory, there is no obligation on the part of Orion to transfer its manufacturing technology to Ipsen or to assist Ipsen in developing manufacturing capabilities to meet Ipsen's supply needs if Ipsen is in material breach of its supply agreement with Orion. We and Ipsen have agreed to collaborate with each other in the event either of our supply rights are terminated by Orion for any reason.

There are no complicated chemistries or unusual equipment required in the manufacturing process for our SARMs. The active ingredient in Ostarine™ and our other SARMs is manufactured using a four-step synthetic process that uses commercially available starting materials and raw materials for each step. Historically, we have

relied on third party vendors for the manufacture of Ostarine™ drug substance. However, Merck has assumed primary manufacturing responsibilities for Ostarine™ and other SARM products developed under our exclusive license and collaboration agreement with Merck.

Competition

The biotechnology and biopharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. We face competition from many different sources, including commercial pharmaceutical and biotechnology enterprises, academic institutions, government agencies and private and public research institutions.

Many of our competitors have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. Our commercial opportunities will be reduced or eliminated if our competitors develop and commercialize similar products that are safer, more effective, have fewer side effects or are less expensive than any products that we and/or our collaborators may develop.

Toremifene 80 mg for the Prevention of Bone Fractures and Treatment of Other Estrogen Deficiency Side Effects of ADT in Men with Prostate Cancer

Currently, there are no products that have been approved by the FDA for the prevention of bone fractures and the treatment of other estrogen deficiency side effects of ADT in men with prostate cancer. We are aware of a number of drugs that are marketed or prescribed off-label for the treatment of single estrogen deficiency related side effects. For example, Evista® (raloxifene hydrochloride), a SERM marketed by Eli Lilly, Fosamax® (alendronate sodium), a bisphosphonate marketed by Merck, Zometa® (zoledronic acid) a bisphosphonate marketed by Novartis, and Actonel® (risendronate sodium), a bisphosphonate marketed by Sanofi-Aventis and Procter & Gamble, are each prescribed for the treatment of osteoporosis. Amgen has submitted a Biologics License Application for denosumab, an investigational drug for treatment of postmenopausal osteoporosis in women and bone loss in patients undergoing hormone ablation for either prostate or breast cancer. Effexor® (venlafaxine hydrochloride), marketed by Wyeth Pharmaceuticals, Catapres® (clonidine hydrochloride), marketed by Boehringer Ingelheim, and Megace® (megesterol acetate), marketed by Bristol Myers Squibb, are prescribed off-label to treat hot flashes caused by ADT. External beam radiation and tamoxifen are both used to treat gynecomastia. There can be significant side effects associated with the use of these drugs and radiation treatment. Most patients would need to take several different drugs and potentially receive radiation treatments to treat multiple estrogen deficiency side effects of ADT. In contrast, we believe that toremifene 80 mg as a single product candidate has the potential to treat multiple estrogen deficiency side effects of ADT.

Toremifene 20 mg for the Prevention of Prostate Cancer in High Risk Men with High Grade PIN

Currently, there are no drug products that have been approved by the FDA for the treatment of high grade PIN to reduce the incidence of prostate cancer. There are government sponsored studies looking at the ability of nutritional supplements to prevent prostate cancer in men with high grade PIN. These studies are much smaller than the toremifene 20 mg Phase III trial and may not have enough clinical patients to show a statistically significant benefit. Avodart®, from GlaxoSmithKline, is being evaluated in a Phase III clinical trial in prostate cancer prevention in men with elevated PSA, but men with high grade PIN were excluded from the Avodart trial. Finasteride has been shown to reduce the risk of prostate cancer and in a retrospective ad hoc analysis the risk of high grade PIN in men with a PSA of 0-3 ng/dl. Because finasteride also increased the risk for high grade prostate cancer tumors (Gleason Grade 7-10) and sexual side effects, some physicians have not recommended use of finasteride for prevention of prostate cancer.

SARMs for the Treatment of Cancer Cachexia and Sarcopenia

There are currently no drugs that have been approved by the FDA for the treatment of cancer cachexia. Although there are two commercially available drugs, nandrolone and oxandrolone, that are being prescribed off-

label for the treatment of some types of cancer cachexia, chronic use of these drugs may result in bleeding liver cysts and liver cell tumors. Nandrolone is an oral steroid that is available from Steris Laboratories, a subsidiary of Watson Pharmaceuticals. Oxandrin® (oxandrolone) is indicated as an adjunctive therapy to promote weight gain after weight loss following extensive surgery, chronic infections and severe trauma and in some patients who without pathophysiologic reasons fail to maintain normal weight but has also been prescribed off-label for cancer cachexia. Oxandrin® was marketed by Savient Pharmaceuticals and generated approximately $60 million in annual sales. Savient has discontinued production of Oxandrin® following the introduction of an authorized generic. Oxandrin® has a black box warning for liver toxicity and has warnings and precautions related to increasing the risk for prostate cancer and virilization in women.

Testosterone products have been used off-label to treat andropause and muscle loss. Owing to its potentially unwanted effects in the prostate and possible inconvenient dosing, we believe that testosterone products have had a limited impact on the market for muscle loss. Pharmacopeia (now owned by Ligand Pharmaceuticals) licensed in the Bristol Myers Squibb SARM program and has a product in a Phase I clinical study. Abbott Laboratories and Ligand Pharmaceuticals have a collaboration to develop a SARM and have been conducting Phase I clinical studies. GlaxoSmithKline also has SARM in a Phase I clinical study. Other pharmaceutical companies are also developing SARMs. Wyeth and Amgen have myostatin inhibitors in development which may compete for similar patients as Ostarine™. Megace® (megesterol acetate) and Marinol® (dronasinol) are appetite stimulants approved for AIDS patients which are used off-label for cancer cachexia. Neither Megace® nor Marinol® increase muscle and neither have been shown to improve physical function.

FARESTON® for the Treatment of Breast Cancer

There are a number of drugs that have been approved by the FDA for the treatment of breast cancer. Tamoxifen, which is marketed by AstraZeneca and several generic manufacturers, has been approved by the FDA for the treatment of advanced breast cancer and the reduction of breast cancer in women at high risk for developing the disease. Aromatase inhibitors, or AIs, such as anastrozole, letrozole and exemestane, are used to treat breast cancer in postmenopausal women. The AIs are growing at the expense of SERMs due to clinical trials such as the clinical trial entitled "Arimidex and Tamoxifen: Alone or in Combination" which has shown efficacy and tolerability advantages for AIs compared to tamoxifen.

Sales and Marketing

In order to commercialize any future products, we must broaden our sales and marketing infrastructure or collaborate with third parties with sales and marketing experience and personnel. We plan to build a specialty sales and marketing infrastructure, which we expect to include approximately 65 sales consultants, to market toremifene 80 mg and toremifene 20 mg, if approved by the FDA, to the relatively small and concentrated community of urologists and medical oncologists in the United States. We have partnered with Ipsen to commercialize toremifene in Europe. We are currently seeking partners to market toremifene in Asia and other markets outside of the United States and Europe.

If Ostarine™ or another of the SARMs under development by us and Merck is approved by the FDA, Merck will commercialize the drug and we will have the opportunity to participate in commercialization through medical affairs and potentially also through copromotion.

Intellectual Property

We will be able to protect our technology from unauthorized use by third parties only to the extent it is covered by valid and enforceable patents or is effectively maintained as trade secrets. Patents and other proprietary rights are an essential element of our business.

For toremifene in the United States and internationally, we have entered into an amended and restated license and supply agreement with Orion Corporation granting us an exclusive license under Orion's patents covering the composition of matter of toremifene for all uses in humans in the United States, and for all human uses outside the United States other than to treat breast cancer. Orion's patent for toremifene will expire in the United States in

September 2009. Foreign counterparts of this patent have expired prior to Ipsen or us receiving regulatory approval to commercialize toremifene. As a result, outside of the United States and in the United States after September 2009, we will need to rely primarily on the protection afforded by the method of use patents that either have been already issued or may later issue from our owned or licensed patent applications.

We have licensed from UTRF method of use patents and pending patent applications for specific disease indications and doses in the United States, and issued and pending patent applications internationally related to the use of toremifene 20 mg for the reduction in the incidence of prostate cancer in high risk men with high grade PIN. The method of use patents issued in the United States related to the use of toremifene for this indication will begin expiring in 2019.

We have our own method of use patents and applications in the United States and internationally related to the use of toremifene 80 mg for the treatment of osteoporosis and prevention of bone fractures in men with prostate cancer treated by ADT, as well as other side effects from ADT such as gynecomastia and hot flashes. A method of use patent related to the use of toremifene for the treatment of ADT-induced osteoporosis and bone fractures in men with prostate cancer is issued in the United States and will expire in 2023.

In all countries in which we hold or have licensed rights to patents or patent applications related to toremifene, the composition of matter patents for toremifene will expire before the method of use patents expire. Furthermore, with respect to the method of use of toremifene 80 mg for the treatment of osteoporosis and bone fractures and other side effects of ADT in men with prostate cancer worldwide and the method of use of toremifene 20 mg for the reduction in the incidence of prostate cancer in high risk men with high grade PIN outside the United States, we have some patents issued and other pending patent applications.

Even though patents have issued in respect of our pending method of use patent applications, after the expiration of the patent covering the composition of matter of toremifene in a particular country, competitors could market and sell generic versions of toremifene at doses and in formulations that are bioequivalent to FARESTON® (toremifene citrate 60 mg) for uses other than the indications for toremifene covered by our issued and pending method of use patent applications, and individual physicians would be permitted to prescribe generic versions of toremifene 60 mg for indications that are protected by our or our licensors' method of use patents and pending patent applications. Assuming toremifene receives appropriate marketing approval, after the expiration of the patent covering the composition of matter of toremifene in a particular country, if patents do not issue in particular countries on account of our pending method of use patent applications related to the use of toremifene 80 mg for the treatment of osteoporosis and bone fractures and other side effects of ADT in men with prostate cancer and the use of toremifene 20 mg for the reduction in the incidence of prostate cancer in high risk men with high grade PIN outside the United States, competitors may be able to market and sell generic versions of toremifene tablets for these indications.

For Ostarine™ and our other SARMs, we have an exclusive license from UTRF under its issued patents and pending patent applications in the United States and internationally covering the composition of matter of the active pharmaceutical ingredient in these product indications, pharmaceutical compositions and methods of synthesizing the active pharmaceutical ingredients. We have also licensed issued and pending patent applications in the United States and internationally related to methods for building muscle mass and bone in patients, for treating bone related disorders including bone frailty and osteoporosis, and for treating muscle wasting disorders including cancer cachexia using Ostarine™ and other SARMs. As part of our collaboration for the development and commercialization of SARMs with Merck, we have granted an exclusive license to Merck for these issued patents and pending patent applications that we have licensed from UTRF.

We also rely on trade secrets, technical know-how and continuing innovation to develop and maintain our competitive position. We seek to protect our proprietary information by requiring our employees, consultants, contractors, outside scientific collaborators and other advisors to execute non-disclosure and confidentiality agreements and our employees to execute assignment of invention agreements to the Company on commencement of their employment. Agreements with our employees also prevent them from bringing any proprietary rights of third parties to us. We also require confidentiality or material transfer agreements from third parties that receive our confidential data or materials.

Government Regulation

New Drug Development and Approval Process

Numerous governmental authorities in the United States and other countries extensively regulate the testing, clinical development, manufacturing and marketing of pharmaceutical products and ongoing research and development activities. In the United States, the FDA rigorously reviews pharmaceutical products under the Federal Food, Drug, and Cosmetic Act and applicable regulations. Non-compliance with FDA regulations can result in administrative and judicial sanctions, including warning letters, clinical holds, fines, recall or seizure of products, injunctions, total or partial suspension of production, refusal of the government to approve marketing applications or allow entry into supply contracts, refusal to permit import or export of products, civil penalties, criminal prosecution and other actions affecting a company and its products. The FDA also has the authority to revoke previously granted marketing authorizations.

To secure FDA approval, an applicant must submit extensive preclinical and clinical data, as well as information about product manufacturing processes and facilities and other supporting information to the FDA for each indication to establish a product candidate's safety and efficacy. The development and approval process takes many years, requires the expenditure of substantial resources and may be subject to delays or limitations of approval or rejection of an applicant's new drug application. Even if the FDA approves a product, the approval is subject to post-marketing surveillance, adverse drug experience and other recordkeeping and reporting obligations, and may involve ongoing requirements for post-marketing studies. The FDA also recently obtained authority to place conditions on any approvals that could restrict the commercial applications, advertising, promotion or distribution of these products. Product approvals may be withdrawn if compliance with regulatory standards is not maintained or if problems occur following initial marketing.

Preclinical and Clinical Testing

Preclinical studies involve laboratory evaluation of product characteristics and animal studies to assess the biological activity and safety of the product. In some cases, long-term preclinical studies are conducted while clinical studies are ongoing. The FDA, under its Good Laboratory Practices regulations, regulates preclinical studies. Violations of these regulations can, in some cases, lead to invalidation of the studies, requiring these studies to be replicated. When the preclinical testing is considered adequate by the sponsor to demonstrate the safety and scientific rationale for initial human studies, the results of the preclinical tests, together with manufacturing information and analytical data, are submitted to the FDA as part of an Investigational New Drug application, or IND. The IND becomes effective, if not rejected by the FDA, within 30 days after the FDA receives the IND. The FDA may, either during the 30-day period after filing of an IND or at any future time, impose a clinical hold on proposed or ongoing clinical trials on various grounds, including that the study subjects are or would be exposed to an unreasonable and significant health risk. If the FDA imposes a clinical hold, clinical trials cannot commence or recommence without FDA authorization and then only under terms authorized by the FDA.

Clinical trials involve the administration of the investigational product candidates to humans under the supervision of a qualified principal investigator. Clinical trials must be conducted in accordance with Good Clinical Practices under protocols submitted to the FDA as part of the IND. In addition, each clinical trial must be approved and conducted under the auspices of an Investigational Review Board, or IRB, and with patient informed consent. The IRB typically considers, among other things, ethical factors and the safety of human subjects.

Clinical trials are conducted in three sequential phases, but the phases may overlap. Phase I clinical trials usually involve healthy human subjects. The goal of a Phase I clinical trial is to establish initial data about the safety, tolerability and pharmacokinetic properties of the product candidates in humans. In Phase II clinical trials, controlled studies are conducted on an expanded population of patients with the targeted disease. The primary purpose of these tests is to evaluate the effectiveness of the drug candidate on the patients to determine if there are any side effects or other risks associated with the drug and to determine the optimal dose of the drug from the safety and efficacy profile developed from the clinical study. Phase III trials involve even larger patient populations, often with several hundred or even several thousand patients, depending on the use for which the drug is being studied. Phase III trials are intended to establish the overall risk-benefit ratio of the drug and provide, if appropriate, an adequate basis for product labeling. During all clinical trials, physicians monitor the patients to determine

effectiveness and to observe and report any reactions or other safety risks that may result from use of the drug candidate.

Product Formulation and Manufacture

Concurrent with clinical trials and preclinical studies, companies must develop information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product. In addition, manufacturers, including contract manufacturers, are required to comply with current applicable FDA Good Manufacturing Practice regulations. The current Good Manufacturing Practice regulations include requirements relating to quality control and quality assurance, as well as the corresponding maintenance of records and documentation. The manufacturing process must be capable of consistently producing quality batches of the product and the manufacturer must develop methods for testing the quality, purity and potency of the final drugs. Additionally, appropriate packaging must be selected and tested and chemistry stability studies must be conducted to demonstrate that the product does not undergo unacceptable deterioration over its shelf-life.

Compliance with current Good Manufacturing Practice regulations also is a condition of new drug application approval. The FDA must approve manufacturing facilities before they can be used in the commercial manufacture of drug products. In addition, manufacturing establishments are subject to pre-approval inspections and unannounced periodic inspections.

New Drug Application Process

After the completion of the clinical trial phases of development, if the sponsor concludes that there is substantial evidence that the drug candidate is safe and effective for its intended use, the sponsor may submit a NDA to the FDA. The application must contain all of the information on the drug candidate gathered to that date, including data from the clinical trials, and be accompanied by a user fee.

Under the Prescription Drug User Fee Act, or PDUFA, submission of a NDA with clinical data requires payment of a fee, with some exceptions. In return, the FDA assigns a goal of six or ten months from filing of the application to return of a first "complete response," in which the FDA may approve the product or request additional information. There can be no assurance that an application will be approved within the performance goal timeframe established under PDUFA. The FDA initially determines whether a NDA as submitted is acceptable for filing. The FDA may refuse to file an application, in which case the FDA retains one-half of the user fees. If the submission is accepted for filing, the FDA begins an in-depth review of the application. As part of this review, the FDA may refer the application to an appropriate advisory committee, typically a panel of clinicians, for review, evaluation and a recommendation. The FDA is not bound by the recommendation of an advisory committee.

If the FDA evaluations of the NDA and the manufacturing facilities are favorable, the FDA may issue an approval letter authorizing commercial marketing of the drug candidate for specified indications. The FDA could also issue a "complete response" letter at the end of the review period. A "complete response" letter will be issued to let a company know that the review period for a drug is complete and that the application is not yet ready for approval. The letter will describe specific deficiencies and, when possible, will outline recommended actions the applicant might take to get the application ready for approval.

Marketing Approval and Post-Marketing Obligations

If the FDA approves an application, the drug becomes available for physicians to prescribe. Periodic reports must be submitted to the FDA, including descriptions of any adverse reactions reported. The FDA may require post-marketing studies, also known as Phase IV studies, as a condition of approval. In addition to studies required by the FDA after approval, trials and studies are often conducted to explore new indications for the drug. The purpose of these trials and studies and related publications is to develop data to support additional indications for the drug, which must be approved by the FDA, and to increase its acceptance in the medical community. In addition, some post-marketing studies are done at the request of the FDA to develop additional information regarding the safety of a product.

In accordance with newly-gained authority pursuant to the Food and Drug Administration Amendments Act of 2007, the FDA may impose risk evaluation mitigation strategies, or REMS, on a product if the FDA believes there is

a reason to monitor the safety of the drug in the marketplace. REMS are a new tool for the FDA that became effective in March 2008, and the agency has begun to implement this new authority on a case-by-case assessment as to whether a REMS is needed and it is unclear how the agency will implement this enforcement authority. REMS could add training requirements for healthcare professionals, safety communications efforts, and limits on channels of distribution, among other things. The sponsor would be required to evaluate and monitor the various REMS activities and adjust them if need be. The financial impact of REMS are uncertain at this time.

Any products manufactured or distributed pursuant to FDA approvals are subject to continuing regulation by the FDA, including record keeping requirements, reporting of adverse experiences with the drug, drug sampling and distribution requirements, notifying the FDA and gaining its approval of certain manufacturing or labeling changes, complying with certain electronic records and signature requirements, and complying with FDA promotion and advertising requirements. Drug manufacturers and their subcontractors are required to register their establishments and are subject to periodic unannounced inspections for compliance with Good Manufacturing Practice requirements. Also, newly discovered or developed safety or effectiveness data may require changes to a product's approved labeling, including the addition of new warnings and contraindications, or even in some instances revocation or withdrawal of the product's approval.

Drug Price Competition and Patent Term Restoration Act of 1984

Under the Drug Price Competition and Patent Term Restoration Act of 1984, known as the Hatch-Waxman Act, a portion of a product's patent term that was lost during clinical development and application review by the FDA may be restored. The Hatch-Waxman Act also provides for a statutory protection, known as exclusivity, against the FDA's acceptance or approval of certain competitor applications. The Hatch-Waxman Act also provides the legal basis for the approval of abbreviated new drug applications, or ANDAs.

Patent term extension can compensate for time lost during product development and the regulatory review process by returning up to five years of patent life for a patent that covers a new product or its use. This period is generally one-half the time between the effective date of an IND and the submission date of a NDA, plus the time between the submission date of a NDA and the approval of that application. Patent term extensions, however, are subject to a maximum extension of five years, and the patent term extension cannot extend the remaining term of a patent beyond a total of 14 years. The application for patent term extension is subject to approval by the United States Patent and Trademark Office in conjunction with the FDA. It generally takes at least six months to obtain approval of the application for patent term extension.

The Hatch-Waxman Act also provides for a period of statutory protection for new drugs that receive NDA approval from the FDA. If a new drug receives NDA approval as a new chemical entity, meaning that the FDA has not previously approved any other new drug containing the same active entity, then the Hatch-Waxman Act prohibits an ANDA or a NDA submitted pursuant to section 505(b)(2) of the Federal Food, Drug, and Cosmetics Act, where the applicant does not own or have a legal right of reference to all of the data required for approval to be submitted by another company for a generic version of such drug (505(b)(2) NDA), with some exceptions, for a period of five years from the date of approval of the NDA. The statutory protection provided pursuant to the Hatch-Waxman Act will not prevent the filing or approval of a full NDA, as opposed to an ANDA or 505(b)(2) NDA, for any drug, including, for example, a drug with the same active ingredient, dosage form, route of administration, strength and conditions of use. In order to obtain a NDA, however, a competitor would be required to conduct its own clinical trials, and any use of the drug for which marketing approval is sought could not violate another NDA holder's patent claims.

If NDA approval is received for a new drug containing an active ingredient that was previously approved by the FDA but the NDA is for a drug that includes an innovation over the previously approved drug, for example, a NDA approval for a new indication or formulation of the drug with the same active ingredient, and if such NDA approval was dependent upon the submission to the FDA of new clinical investigations, other than bioavailability studies, then the Hatch-Waxman Act prohibits the FDA from making effective the approval of an ANDA or 505(b)(2) NDA for a generic version of such drug for a period of three years from the date of the NDA approval. This three year exclusivity, however, only covers the innovation associated with the NDA to which it attaches. Thus, the three year exclusivity does not prohibit the FDA, with limited exceptions, from approving ANDAs or 505(b)(2) NDAs for drugs containing the same active ingredient but without the new innovation.

While the Hatch-Waxman Act provides certain patent restoration and exclusivity protections to innovator drug manufacturers, it also permits the FDA to approve ANDAs for generic versions of their drugs assuming the approval would not violate another NDA holder's patent claims. The ANDA process permits competitor companies to obtain marketing approval for a drug with the same active ingredient for the same uses but does not require the conduct and submission of clinical studies demonstrating safety and effectiveness for that product. Instead of safety and effectiveness data, an ANDA applicant needs only to submit data demonstrating that its product is bioequivalent to the innovator product as well as relevant chemistry, manufacturing and product data. The Hatch-Waxman Act also instituted a third type of drug application that requires the same information as a NDA, including full reports of clinical and preclinical studies, except that some of the information from the reports required for marketing approval comes from studies which the applicant does not own or have a legal right of reference. This type of application, a 505(b)(2) NDA, permits a manufacturer to obtain marketing approval for a drug without needing to conduct or obtain a right of reference for all of the required studies.

If a competitor submits an ANDA or 505(b)(2) NDA for a compound or use of any compound covered by another NDA holder's patent claims, the Hatch-Waxman Act requires, in some circumstances, the applicant to notify the patent owner and the holder of the approved NDA of the factual and legal basis of the applicant's opinion that the patent is not valid or will not be infringed. Upon receipt of this notice, the patent owner and the NDA holder have 45 days to bring a patent infringement suit in federal district court and obtain a 30-month stay against the company seeking to reference the NDA. The NDA holder could still file a patent suit after the 45 days, but if they miss the 45-day deadline, they would not have the benefit of the 30-month stay. Alternatively, after this 45-day period, the applicant may file a declaratory judgment action, seeking a determination that the patent is invalid or will not be infringed. Depending on the circumstances, however, the applicant may not be able to demonstrate a controversy sufficient to confer jurisdiction on the court. The discovery, trial and appeals process in such suits can take several years. If such a suit is commenced, the Hatch-Waxman Act provides a 30-month stay on the approval of the competitor's ANDA or 505(b)(2) NDA. If the litigation is resolved in favor of the competitor or the challenged patent expires during the 30-month period, unless otherwise extended by court order, the stay is lifted and the FDA may approve the application. Under regulations recently issued by the FDA, and essentially codified under the recent Medicare prescription drug legislation, the patent owner and the NDA holder have the opportunity to trigger only a single 30-month stay per ANDA or 505(b)(2) NDA. Once the applicant of the ANDA or 505(b)(2) NDA has notified the patent owner and the NDA holder of the infringement, the applicant cannot be subjected to another 30-month stay, even if the applicant becomes aware of additional patents that may be infringed by its product.

Pharmaceutical Pricing and Reimbursement

In both domestic and foreign markets, sales of any products for which we receive regulatory approval for commercial sale will depend in part on the availability of reimbursement from third-party payors. Third-party payors include government health administrative authorities, managed care providers, private health insurers and other organizations. These third-party payors are increasingly challenging the price and examining the cost-effectiveness of medical products and services. In addition, significant uncertainty exists as to the reimbursement status of newly approved healthcare product candidates. We may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost-effectiveness of our products. Our product candidates may not be considered cost-effective. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development. The United States and state governments continue to propose and pass legislation designed to reduce the cost of healthcare. Adoption of new legislation could further limit reimbursement for pharmaceuticals.

The marketability of any products for which we receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide adequate coverage and reimbursement. In addition, an increasing emphasis on managed care in the United States has and will continue to increase the pressure on pharmaceutical pricing. Currently, our only marketed product, FARESTON® for the treatment of metastatic breast cancer, is eligible for coverage and reimbursement by third-party payors.

Research and Development

Since our inception, we have been focused on drug discovery, preclinical development and clinical development

programs. Our research and development expenses were $44.3 million for the year ended December 31, 2008, $38.5 million for the year ended December 31, 2007, and $33.9 million for the year ended December 31, 2006.

Employees

As of December 31, 2008, we had 147 employees, 37 of whom were M.D.s and/or Ph.D.s. None of our employees is subject to a collective bargaining agreement. We believe that we have good relations with our employees.

Available Information

We file reports with the Securities and Exchange Commission, or SEC, including annual reports on Form 10-K, quarterly reports on Form 10-Q, and other reports from time to time. The public may read and copy any materials filed with the SEC at the SEC's Public Reference Room at 100 F Street, NW, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. We are an electronic filer and the SEC maintains an Internet site at http://www.sec.gov that contains the reports, proxy and information statements, and other information filed electronically. Our website address is http://www.gtxinc.com. Please note that these website addresses are provided as inactive textual references only. 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 reasonably practicable after such material is electronically filed with or furnished to the SEC. The information provided on our website is not part of this report, and is therefore not incorporated by reference unless such information is otherwise specifically referenced elsewhere in this report.

Executive Officers of the Registrant

The following table sets forth information about our executive officers as of February 26, 2009.

Name	Age	Position(s)
Mitchell S. Steiner, M.D., F.A.C.S.	48	Chief Executive Officer and Vice Chairman of the Board of Directors
Marc S. Hanover	46	President, Chief Operating Officer and Director
Ronald A. Morton, Jr., M.D., F.A.C.S.	50	Vice President, Chief Medical Officer
Henry P. Doggrell	60	Vice President, General Counsel and Secretary
Mark E. Mosteller	46	Vice President, Chief Financial Officer and Treasurer
James T. Dalton, Ph.D.	46	Vice President, Preclinical Research and Development
Gregory A. Deener	47	Vice President, Sales and Marketing

Mitchell S. Steiner, M.D., F.A.C.S., a co-founder of GTx, has served as our Chief Executive Officer and Vice Chairman of our Board of Directors since our inception in September 1997. From 1995 to 2003, Dr. Steiner held numerous academic appointments, including Chairman and Professor of Urology, Director of Urologic Oncology and Research and the Chair of Excellence in Urologic Oncology at the University of Tennessee. Since 2003, Dr. Steiner has continued to serve on the faculty at the University of Tennessee. Dr. Steiner holds a B.A. in Molecular Biology from Vanderbilt University and an M.D. from the University of Tennessee, and performed his surgery and urologic training at The Johns Hopkins Hospital.

Marc S. Hanover, a co-founder of GTx, has served as our President and Chief Operating Officer and a director since our inception in September 1997. Prior to joining GTx, Mr. Hanover was a founder of Equity Partners International, Inc., a private equity firm in Memphis, Tennessee, and participated as a founder and investor in three healthcare companies. From 1985 to 1997, Mr. Hanover was a Senior Vice President and a member of the Executive Management Committee of National Bank of Commerce in Memphis, Tennessee. Mr. Hanover holds a B.S. in Biology from the University of Memphis and a MBA in Finance from the University of Memphis.

Ronald A. Morton, Jr., M.D., F.A.C.S., was appointed Vice President and Chief Medical Officer in April 2007. He joined GTx from the University of Medicine & Dentistry of New Jersey Robert Wood Johnson Medical School, where he served as Professor of Surgery, Chief of Urology and Director of Urologic Oncology for the Cancer Institute of New Jersey from January 2004 until April 2007. Dr. Morton also held the Conzen Chair for Clinical Research and was the Director of the New Jersey Center for Clinical and Translational Sciences. Prior to joining Robert Wood Johnson Medical School in 2004, Dr. Morton held a dual faculty appointment at the Baylor College of Medicine in the Scott Department of Urology and in the Department of Molecular and Cell Biology (May 1994 to December 2003), was Clinical Director of the Baylor Adult Urology Program (July 2000 to December 2003), Chief of Urology at the Houston Veterans Administration Medical Center (January 1999 to December 2003), and Director of the Baylor Prostate Cancer Center Research Laboratories (July 1996 to December 2003). He received his bachelor and medical degrees from The Johns Hopkins University and completed his urology training and postdoctoral fellowship and was an AFUD Scholar at the Johns Hopkins Brady Urological Institute.

Henry P. Doggrell has served as our General Counsel and Secretary since October 2001 and was appointed Vice President on January 20, 2005. From April 1998 to August 2001, Mr. Doggrell was Senior Vice President, Corporate Affairs at Buckeye Technologies, Inc., a specialty cellulose company, where he was responsible for matters including corporate finance, investor relations, mergers and acquisitions, intellectual property and licensing and strategic development. From 1996 to 1998, Mr. Doggrell served as General Counsel and Secretary of Buckeye Technologies. Prior to joining Buckeye Technologies, Mr. Doggrell was a partner of the Baker, Donelson, Bearman, Caldwell and Berkowitz law firm from 1988 to 1996, where he served as a member of the law firm management committee and Chair of the firm's Corporate Securities department. Mr. Doggrell holds a B.S. in Commerce from the University of Virginia and a JD from Vanderbilt University.

Mark E. Mosteller has served as our Chief Financial Officer since August 2001 and was appointed Vice President and Treasurer on January 20, 2005. From April 1997 to August 2001, Mr. Mosteller was an Executive Vice President of Union Planters Bank National Association, a subsidiary of Union Planters Corporation, a bank holding company, and Chief Operating Officer of Union Planters Mortgage, the mortgage division of Union Planters Bank National Association. From 1994 to 1997, Mr. Mosteller was the Chief Financial Officer of Boatmen's National Mortgage, Inc., the mortgage subsidiary of Boatmen's Bancshares, Inc. From 1984 to 1994, Mr. Mosteller was employed as an audit senior manager with Ernst & Young LLP. Mr. Mosteller is a Certified Public Accountant and holds a B.S. in Accounting from the University of Tennessee.

James T. Dalton, Ph.D., has served as Vice President, Preclinical Research and Development since January 2005. Dr. Dalton served as a scientific consultant to GTx from 1999 to 2005. Prior to joining GTx, Dr. Dalton held several academic appointments including Assistant and Associate Professor of Pharmaceutical Sciences in the College of Pharmacy at the University of Tennessee, Memphis (1992-2000) and Professor in the Division of Pharmaceutics, College of Pharmacy at The Ohio State University (2000-2007). SARMs were first discovered in Dr. Dalton's research laboratories, and he is co-inventor on all SARM patents. Dr. Dalton holds a B.S. in Pharmacy from the University of Cincinnati and a Ph.D. in Pharmaceutics and Pharmaceutical Chemistry from The Ohio State University.

Gregory A. Deener was appointed Vice President, Sales and Marketing on January 20, 2005, and prior to that he served as our Director of Marketing and Sales since February 2004. Mr. Deener has over 20 years of experience in Marketing and Sales and has launched a urology medicine within the U.S. From 1996 to December 2003, Mr. Deener served as a Marketing Director for GlaxoSmithKline in various roles within the U.S. and Europe. Most recently Mr. Deener was responsible for the launch of Avodart, a urology medicine for BPH. From 1983 to 1996, Mr. Deener worked for Procter & Gamble in Brand Management and Sales. Mr. Deener holds a B.S. in Business Administration from the University of North Carolina at Chapel Hill.

ITEM 1A. RISK FACTORS

We have identified the following additional risks and uncertainties that may have a material adverse effect on our business, financial condition or results of operations. Investors should carefully consider the risks described below before making an investment decision. Our business faces significant risks and the risks described below

may not be the only risks we face. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations. If any of these risks occur, our business, results of operations or financial condition could suffer, the market price of our common stock could decline and you could lose all or part of your investment in our common stock.

Risks Related to Our Financial Results and Need for Additional Financing

We have incurred losses since inception and anticipate that we will incur continued losses for the foreseeable future.

We have a limited operating history. As of December 31, 2008, we had an accumulated deficit of $321.9 million, of which $96.3 million related to non-cash dividends and adjustments to the preferred stock redemption value. We have incurred losses in each year since our inception in 1997. Net losses were $51.8 million for the year ended December 31, 2008, $40.4 million in 2007, and $35.5 million in 2006. We expect to continue to incur significant and increasing operating losses for the foreseeable future. These losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

Because of the numerous risks and uncertainties associated with developing small molecule drugs, we are unable to predict the extent of any future losses or when we will become profitable, if at all. We have primarily financed our operations and internal growth through sales of common stock and preferred stock. In addition, we have received upfront license fees and milestone and other payments pursuant to our collaborative arrangements with third parties, including $40.0 million in upfront license fees from Merck received in January 2008, a $1.5 million milestone payment from Ipsen Developments Limited, or Ipsen, received in April 2008, and $5.0 million received from Merck in guaranteed cost reimbursements for research and development activities in December 2008. FARESTON® is currently our only commercial product and, until such time that we receive regulatory approval to market any of our product candidates, we expect that FARESTON® will account for all of our product revenue. For the year ended December 31, 2008, we recognized $1.1 million in net revenues from the sale of FARESTON®.

We expect our research and development expenses to increase in connection with our efforts to obtain regulatory approval of toremifene 80 mg for the prevention of bone fractures and treatment of other estrogen deficiency side effects of androgen deprivation therapy in men with prostate cancer, our ongoing clinical trials, our increasing SARM research efforts with Merck as a part of our collaboration, and the continued preclinical and clinical development of other product candidates, including GTx-758. In addition, subject to regulatory approval of any of our product candidates, we expect to incur additional sales and marketing expenses and increased manufacturing expenses.

We will need substantial additional funding and may be unable to raise capital when needed, which would force us to delay, reduce or eliminate our product development programs or commercialization efforts.

We will need to raise additional capital to:

- fund our operations and clinical trials;
- continue our research and development; and
- commercialize our product candidates, if any such product candidates receive regulatory approval for commercial sale.

We estimate that our current cash and cash equivalent balances, short-term investments, interest income and product revenue from the sale of FARESTON® will be sufficient to meet our projected operating requirements through at least the next twelve months. This estimate does not include funding from future milestone payments that we may receive under our existing collaborations with Merck and Ipsen, nor does it include any funding that we may receive under potential future collaboration arrangements with other pharmaceutical companies or potential future issuances and sales of our securities. Our future funding requirements will depend on many factors, including:

- the scope, rate of progress and cost of our and/or our collaborators' clinical trials and other research and development activities;
- future clinical trial results;

- the achievement of certain milestone events under, and other matters related to, our collaborative arrangements with Merck and Ipsen;
- the terms and timing of any future collaborative, licensing and other arrangements that we may establish;
- the cost and timing of regulatory filings and/or approvals and any related restrictions, limitations, and/or warnings;
- potential future licensing fees, milestone payments and royalty payments, including any milestone payments or royalty payments that we may receive under our collaborative arrangements with Merck and Ipsen;
- the cost and timing of establishing medical education, sales, marketing and distribution capabilities;
- the cost of establishing clinical and commercial supplies of our product candidates and any products that we and/or our collaborators may develop;
- the effect of competing technological and market developments;
- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights; and
- the extent to which we acquire or invest in businesses, products and technologies, although we currently have no commitments or agreements relating to any of these types of transactions.

Until we can generate a sufficient amount of product revenue, we expect to finance future cash needs through public or private equity offerings, debt financings or collaboration and licensing arrangements, such as our arrangements with Merck and Ipsen, as well as through interest income earned on the investment of our cash balances and short-term investments, and revenues from the sale of FARESTON®. With the exception of payments that we may receive under our collaborations with Merck and Ipsen, we do not currently have any commitments for future external funding.

If we raise additional funds by issuing equity securities, our stockholders will experience dilution. Debt financing, if available, may involve restrictive covenants. Any debt financing or additional equity that we raise may contain terms that are not favorable to us or our stockholders. If we raise additional funds through collaboration and/or licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or product candidates, or we may be required to grant licenses on terms that are not favorable to us. Our ability to raise additional funds may be adversely impacted by current economic conditions, including the effects of the recent disruptions to and volatility in the credit and financial markets in the United States and worldwide, which have resulted in the bankruptcy, failure, collapse or sale of various financial institutions and an unprecedented level of U.S. and other governmental intervention. As a result of these and other factors, we cannot be certain that additional funding will be available on acceptable terms, or at all. If adequate funds are not available due to the recent disruptions to and volatility in the credit and financial markets in the United States and worldwide or other factors, we may be required to delay, reduce the scope of or eliminate one or more of our research or development programs or obtain funds through collaborations with others that are on unfavorable terms or that may require us to relinquish rights to some of our technologies or product candidates that we would otherwise seek to develop on our own.

Risks Related to Development of Product Candidates

We will not be able to commercialize our product candidates if our preclinical studies do not produce successful results or if our or our collaborators' clinical trials do not demonstrate safety and efficacy in humans.

Preclinical and clinical testing is expensive, can take many years and has an uncertain outcome. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and interim results of a clinical trial do not necessarily predict final results. Typically, the failure rate for development candidates is high. Significant delays in clinical testing could materially impact our product development costs. We

do not know whether planned clinical trials will begin on time, will need to be restructured or will be completed on schedule, if at all.

In clinical studies, the efficacy and/or safety results from the trial may be insufficient to support the submission or approval of a new drug application, or NDA, with the U.S. Food and Drug Administration, or FDA. For example, in connection with our pivotal Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with precancerous prostate lesions called high grade prostatic intraepithelial neoplasia, or high grade PIN, a planned efficacy interim analysis was conducted in the second quarter of 2008, which concluded that the efficacy results did not reach the specified statistical outcome and we were therefore unable to submit a NDA to the FDA based on this efficacy interim analysis. Although we anticipate conducting a planned efficacy analysis in the summer of 2009, the analysis may conclude that the efficacy results are insufficient to support the submission of a NDA in which case we would not submit a NDA to the FDA until the end of the full 36-month clinical trial period, if at all.

We or our collaborators may experience numerous unforeseen events during, or as a result of, preclinical testing, and the clinical trial process that could delay or prevent our or our collaborators' ability to commercialize our product candidates, including:

- regulators or institutional review boards may not authorize us or our collaborators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- preclinical or clinical trials may produce negative or inconclusive results, which may require us or our collaborators to conduct additional preclinical or clinical testing or to abandon projects that we expect to be promising;
- registration or enrollment in clinical trials may be slower than we currently anticipate, resulting in significant delays;
- we or our collaborators may suspend or terminate clinical trials if the participating patients are being exposed to unacceptable health risks;
- regulators or institutional review boards may suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements; and
- our product candidates may not have the desired effects or may include undesirable side effects.

If any of these events were to occur and, as a result, we or our collaborators have significant delays in or termination of clinical trials, our costs could increase and our ability to generate revenue could be impaired, which would adversely impact our financial results.

For some of the indications for which we intend to conduct or are currently conducting clinical trials for our product candidates, we do not have evidence from prior preclinical studies in animals or clinical trials in humans of the potential effectiveness of such product candidates for such indications. In the absence of preclinical or clinical data, our beliefs regarding the potential effectiveness of our product candidates for these indications is generally based on pharmacokinetic data and analyses and pharmacological rationales. Our or our collaborators' preclinical or clinical trials may produce negative or inconclusive results that would not support our beliefs regarding the potential effectiveness of our product candidates.

If we or our collaborators observe serious or other adverse events during the time our product candidates are in development or after our products are approved and on the market, we or our collaborators may be required to perform lengthy additional clinical trials, may be denied regulatory approval of such products, may be forced to change the labeling of such products or may be required to withdraw any such products from the market, any of which would hinder or preclude our ability to generate revenues.

In our Phase III clinical trial for toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, some patients have experienced venous thromboembolic events, or VTEs, such as deep vein thromboses and pulmonary embolisms, as well as myocardial infarctions, or heart attacks, which have been considered by investigators as possibly related to treatment with toremifene 20 mg. Because this trial is blinded, we cannot establish whether these patients received placebo or toremifene 20 mg in this trial. In addition, although the results from our Phase III clinical trial for toremifene 80 mg for the prevention of bone fractures and treatment of

other estrogen deficiency side effects of androgen deprivation therapy, or ADT, in men with prostate cancer showed that the drug had a favorable safety profile and was well tolerated, there were a higher number of VTEs in the toremifene 80 mg treatment group 17 (2.6%) versus 7 (1.1%) in the placebo group. Even though the majority of VTEs occurred in men who were at high risk for a VTE (including: age greater than 80 years, history of VTEs, recent surgical procedure or immobilization) and our results showed that the number of men without major risk factors for VTEs in whom a VTE occurred was 5 in the toremifene 80 mg treatment group versus 3 in the placebo group, the FDA will consider the overall safety profile when making its determination to grant approval and the requirement of any potential warnings in the label if approval is granted.

As part of our effort to complete the requirements for the submission of applications for regulatory approval of toremifene 80 mg and 20 mg, we have conducted a number of studies of toremifene in addition to our clinical trials, including a Thorough QT study (toremifene 80 mg and toremifene 20 mg), a bioequivalence study (toremifene 80 mg) and a series of drug-drug interaction studies (toremifene 80 mg and toremifene 20 mg), and are conducting a semen quality study (toremifene 20 mg) to assess the effect of toremifene. The results of the Thorough QT study of 250 healthy male volunteers, with 5 parallel cohorts receiving 20 mg, 80 mg or 300 mg doses of toremifene, moxifloxacin, or placebo, showed that toremifene prolonged the QT interval in a dose dependent manner. The mean change in QTcB (a measurement of QT interval corrected by Bazett's formula) from baseline relative to placebo for toremifene 20 mg was 5.79 milliseconds, for toremifene 80 mg, it was 22.43 milliseconds, and for moxifloxacin, it was 8.83 milliseconds. Since we market FARESTON® in the United States under a license agreement with Orion, we notified the FDA of the Thorough QT study results and have proposed modifications to the FARESTON® label in the United States. FDA action on the proposed label changes is pending. Separately, Orion recommended label changes to the European Medicines Agency, or EMEA. In January 2009, the EMEA recommended that the FARESTON® label within the European Union reflect that toremifene should not be given to patients at risk of prolonged QT intervals or other certain heart problems. The results of these completed studies have been included as a part of the NDA submission to the FDA for our toremifene 80 mg product candidate for the prevention of bone fractures in men with prostate cancer on ADT and, subject to receipt of favorable results from our ongoing toremifene 20 mg Phase III clinical trial, will be included as a part of the NDA submission for our toremifene 20 mg product candidate for the prevention of prostate cancer in high risk men with high grade PIN, and will be used to update the label for FARESTON®. The study results could lead to the inclusion of restrictions, limitations and/or warnings in the label of FARESTON® or an approved product candidate, which may adversely affect the marketability of the product or limit the patients to whom the product is prescribed.

In addition, in our Phase II clinical trial for Ostarine™ for the treatment of cancer cachexia (cancer induced muscle loss), we observed mild elevations of hepatic enzymes in a few patients, and in our preclinical studies for Ostarine™, only at the highest doses, we observed expected selective effects on the reproductive and other target organs in the male population consistent with the stimulating and inhibiting effects on the androgen receptor which is located in these organs.

If the incidence of the events described above increases in number or severity, if a regulatory authority believes that these or other events constitute an adverse effect caused by the drug, or if other effects are identified during clinical trials that we are currently conducting, during clinical trials that we or our collaborators may conduct in the future or after any of our product candidates are approved and marketed:

- we or our collaborators may be required to conduct additional preclinical or clinical trials, make changes in labeling of any such approved products, reformulate any such products, or implement changes to or obtain new approvals of our contractors' manufacturing facilities;
- regulatory authorities may be unwilling to approve our product candidates or may withdraw approval of our products;
- we may experience a significant drop in the sales of the affected products;
- our reputation in the marketplace may suffer; and
- we may become the target of lawsuits, including class action suits.

Any of these events could prevent approval or harm sales of the affected product candidates or products, or could substantially increase the costs and expenses of commercializing and marketing any such products.

Risks Related to Our Dependence on Third Parties

If third parties do not manufacture our product candidates in sufficient quantities, in the required timeframe, and at an acceptable cost, clinical development and commercialization of our product candidates would be delayed.

We do not currently own or operate manufacturing facilities, and we rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of our product candidates. Our current and anticipated future dependence upon others for the manufacture of our product candidates may adversely affect our future profit margins and our ability to develop product candidates and commercialize any product candidates on a timely and competitive basis.

We have agreed to purchase from Orion Corporation, or Orion, our worldwide requirements of toremifene in a finished tablet form at specified prices under a license and supply agreement. Similarly, Ipsen has agreed to purchase from Orion toremifene tablets for clinical testing and commercial sale in the European Union, Switzerland, Norway, Iceland, Lichtenstein and the Commonwealth of Independent States, which we refer to collectively as the European Territory, under an amended supply agreement with Orion. As such, both we and Ipsen rely on Orion as the single source supplier of toremifene.

In the event that Orion terminates our license and supply agreement due to our uncured material breach or bankruptcy, we would not be able to manufacture toremifene until the expiration of Orion's patents with respect to the composition of matter of toremifene. Although Orion's composition of matter patents within the European Territory have expired, and as such, would not prevent Ipsen from manufacturing toremifene within the European Territory, there is no obligation on the part of Orion to transfer its manufacturing technology to Ipsen or to assist Ipsen in developing manufacturing capabilities to meet Ipsen's supply needs if Ipsen is in material breach of its supply agreement with Orion. Although we and Ipsen have agreed to collaborate with each other in the event either of our supply rights are terminated by Orion for any reason, a disruption in the supply of toremifene could delay the development of and impair our and Ipsen's ability to commercialize toremifene. In addition, Orion may terminate its obligation to supply us and Ipsen with toremifene if Orion ceases its manufacture of toremifene permanently, or Orion may terminate its obligation to supply us with toremifene if toremifene is not approved for commercial sale in the United States prior to December 31, 2009. If such termination occurs because Orion is no longer manufacturing toremifene, or because such regulatory approval is not obtained prior to the specified date, we and Ipsen will have the right to manufacture toremifene, but any arrangements we make for an alternative supply would still have to be made with a qualified alternative supplier with appropriate FDA approval in order for us to obtain our supply requirements for toremifene. We and Ipsen have mutually agreed to cooperate in the manufacture of toremifene in the event Orion ceases manufacture of toremifene for any of the above-mentioned reasons.

We also rely on Orion to cooperate with us in the filing and maintenance of regulatory filings with respect to the manufacture of toremifene. Orion may terminate its obligation to assist us in obtaining and maintaining regulatory approval of toremifene if we do not receive regulatory approval for toremifene in the United States prior to December 31, 2009. If Orion terminates its obligation to cooperate in these activities, or does not cooperate with us or otherwise does not successfully file or maintain these regulatory filings, we would be required to make arrangements with a qualified alternative supplier, which could delay or prevent regulatory approval of toremifene.

Historically, we have relied on third party vendors for the manufacture of Ostarine™ drug substance. However, Merck has assumed primary manufacturing responsibilities for Ostarine™ and other SARM products developed under our exclusive license and collaboration agreement with Merck. If Merck does not manufacture and supply sufficient quantities of clinical trial materials to support our clinical trials, we could experience a delay in conducting clinical trials of Ostarine™ or other SARM product candidates. We may not be able to maintain or renew our existing or any other third-party manufacturing arrangements on acceptable terms, if at all. If we are unable to continue relationships with Orion for toremifene and Merck for Ostarine™ and other SARM product candidates, or to do so at an acceptable cost, or if Merck or other suppliers fail to meet our requirements for Ostarine™ or other SARM product candidates for any reason, we would be required to obtain alternate suppliers. However, we may not be permitted to obtain alternate suppliers for toremifene under our license agreement with Orion if Orion terminates its supply of toremifene due to our uncured material breach or bankruptcy. Any inability to obtain alternate suppliers, including an inability to obtain approval from the FDA of an alternate supplier, would delay or prevent the clinical development and commercialization of these product candidates.

Use of third-party manufacturers may increase the risk that we will not have adequate supplies of our product candidates.

Reliance on third-party manufacturers entails risks, to which we would not be subject if we manufactured product candidates or products ourselves, including:

- reliance on the third party for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreement by the third party because of factors beyond our control;
- the possible termination or non-renewal of the agreement by the third party, based on its own business priorities, at a time that is costly or inconvenient for us;
- drug product supplies not meeting the requisite requirements for clinical trial use; and
- the possible exercise by Orion of its right to terminate its obligation to supply us with toremifene:
    - if it permanently ceases manufacture of toremifene or if we do not obtain regulatory approval of toremifene in the United States prior to December 31, 2009; or
    - if Orion terminates due to our uncured material breach or bankruptcy.

If we are not able to obtain adequate supplies of our product candidates, it will be more difficult for us to develop our product candidates and compete effectively. Our product candidates and any products that we and/or our collaborators may develop may compete with other product candidates and products for access to manufacturing facilities. For example, the active pharmaceutical ingredient in our toremifene 80 mg and toremifene 20 mg product candidates is also the active pharmaceutical ingredient in FARESTON®. Further, Orion has agreed to supply toremifene tablets to Ipsen for clinical trials and commercial supply in the European Territory. Orion also manufactures toremifene for third parties for sale outside the United States for the treatment of metastatic breast cancer in postmenopausal women.

Our present or future manufacturing partners may not be able to comply with FDA-mandated current Good Manufacturing Practice regulations, other FDA regulatory requirements or similar regulatory requirements outside the United States. Failure of our third-party manufacturers or us to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, failure of regulatory authorities to grant marketing approval of our product candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates.

We are dependent on our collaborative arrangement with Ipsen to develop and commercialize toremifene in the European Territory and are dependent on our collaborative arrangement with Merck for the joint research, development and commercialization of SARM compounds and products. We may also be dependent upon additional collaborative arrangements to complete the development and commercialization of some of our other product candidates. These collaborative arrangements may place the development and commercialization of our product candidates outside our control, may require us to relinquish important rights or may otherwise be on terms unfavorable to us.

The loss of Ipsen or Merck as a collaborator in the development or commercialization of toremifene or SARM compounds and related SARM products, respectively, any dispute over the terms of our collaborations with Ipsen or Merck, or any other adverse developments in our relationships with Ipsen or Merck could materially harm our business and might accelerate our need for additional capital. For example, Ipsen is obligated to initiate and conduct appropriate clinical studies as required by the appropriate regulatory authorities in order to obtain marketing approvals of toremifene within the European Territory. Any failure on the part of Ipsen to initiate these studies could delay the commercialization of toremifene within the European Territory. Likewise, Merck is responsible for conducting all clinical trials for SARM product candidates developed under the collaboration, and the failure of Merck to initiate one or more of these clinical trials would adversely affect the development of our SARM product candidates.

We may not be successful in entering into additional collaborative arrangements with other third parties. If we fail to enter into additional collaborative arrangements on favorable terms, it could delay or impair our ability to develop and commercialize our other product candidates and could increase our costs of development and commercialization.

Dependence on collaborative arrangements, including our arrangements with Ipsen and Merck for the development and commercialization of toremifene and SARM compounds and products, respectively, subjects us to a number of risks, including:

- we are not able to control either the amount and timing of resources that Ipsen devotes to toremifene or the amount of timing and resources that Merck devotes to SARM compounds and products developed under our collaboration with Merck;
- we may not be able to control the amount and timing of resources that our potential future partners may devote to our product candidates;
- our partners may experience financial difficulties or changes in business focus;
- we may be required to relinquish important rights such as marketing and distribution rights;
- under certain circumstances, Ipsen may not be required to commercialize toremifene in certain countries of the European Territory if Ipsen determines that it is not commercially reasonable for it to do so;
- pricing reimbursement constraints within the European Territory may diminish the prospects of our receiving royalty payments from Ipsen on aggregate net sales of toremifene in some or all of the countries within the European Territory;
- should a collaborator fail to develop or commercialize one of our compounds or product candidates, we may not receive any future milestone payments and will not receive any royalties for the compound or product candidate;
- business combinations or significant changes in a collaborator's business strategy may also adversely affect a collaborator's willingness or ability to complete its obligations under any arrangement;
- under certain circumstances, a collaborator could move forward with a competing product candidate developed either independently or in collaboration with others, including our competitors; and
- collaborative arrangements are often terminated or allowed to expire, which would delay the development and may increase the cost of developing our product candidates.

We may not realize the anticipated benefits from our collaborative arrangements with Ipsen and Merck.

We may not receive any future milestone payments provided for under our collaborative arrangements with Ipsen and Merck if our agreements with them are terminated, if certain clinical development and regulatory milestones under our agreements with them are not achieved, with respect to our agreement with Ipsen, if Ipsen fails to develop and commercialize toremifene in the European Territory, or, with respect to our agreement with Merck, if we and Merck fail to develop and commercialize any of the SARMs included in or arising from our collaboration. In addition, even if required regulatory approvals are obtained, it is possible that neither Ipsen nor Merck will successfully market and sell toremifene or any SARM products, respectively, in which case we would not receive royalties to the extent that we currently anticipate. Furthermore, our royalty rates under our collaboration and license agreement with Ipsen are subject to a possible reduction if a generic version of toremifene achieves specified sales levels in a major country within the European Territory, and each of Ipsen and Merck may be entitled to offset a portion of any royalties due to us if Ipsen or Merck licenses patent rights from a third party that would otherwise be infringed by Ipsen's or Merck's use, manufacture, sale or import of toremifene or SARM compounds, respectively.

Under our agreement with Ipsen, we and Ipsen have agreed that neither party will seek to commercialize, promote, market or sell certain products within the European Territory for an agreed period of time subsequent to the time of the first commercial launch of toremifene within the European Territory. We and Ipsen have also agreed to grant to the other a right of first negotiation with respect to the development, marketing, sale and distribution of any new SERM-based products for the field of the prevention and treatment of prostate cancer or related side

effects, or any other indication the parties agree on. However, we cannot assure you that we will be able to reach an agreement with Ipsen on reasonable terms, or at all, for any new SERM-based products.

Under our agreement with Merck, we and Merck have agreed that neither party will engage in the development and commercialization of SARMs with any third party for an agreed upon period of time. However, we cannot assure you that we and Merck will be able to successfully develop new SARM products or identify new indications for existing and/or future SARM products under our collaboration with Merck. Additionally, Merck has the right to terminate our agreement with Merck for any reason after a specified period of time with prior written notice, and Ipsen has the right to terminate our agreement with Ipsen with 12 months prior written notice for any reason and with 30 days prior written notice as a result of legitimate and documented safety concerns. Both Ipsen and Merck may terminate their agreements with us following our uncured material breach or bankruptcy. If our agreements with Ipsen and Merck are terminated, the anticipated future benefits to us from these agreements would be eliminated, the development and commercialization of toremifene in the European Territory and the development and commercialization of our SARM product candidates could be delayed, and our costs of development would increase. For example, Merck's obligation to pay us the remaining $10.0 million of the $15.0 million in guaranteed cost reimbursements for research funding over a three year period is subject to our exclusive license and collaboration agreement with Merck not being terminated for cause and there not occurring certain change of control events involving us during such three year period. In any such or similar events, we may not realize the anticipated benefits from our collaborative arrangements with Ipsen and Merck.

If third parties on whom we rely do not perform as contractually required or expected, we may not be able to obtain regulatory approval for or to commercialize our product candidates.

We do not have the ability to independently conduct clinical trials for our product candidates, and we must rely on third parties, such as contract research organizations, medical institutions, clinical investigators and contract laboratories to conduct our clinical trials. In addition, we rely on third parties to assist with our preclinical development of product candidates. If these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, if the third parties need to be replaced, or if the quality or accuracy of the data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our preclinical development activities or clinical trials may be extended, delayed, suspended or terminated, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates.

Risks Related to Our Intellectual Property

Our license agreement with Orion excludes the use of toremifene in humans to treat breast cancer outside the United States and may limit our ability to market toremifene for human uses outside the United States.

Our exclusive license and supply agreement from Orion excludes the use of toremifene for the treatment of metastatic breast cancer outside the United States. Orion has licensed to other parties the right to market, sell and distribute toremifene for the treatment of advanced breast cancer outside the United States and could license additional parties to market, sell and distribute toremifene for this indication outside the United States.

Under the terms of our license agreement with Orion, Orion may require us and Ipsen to modify our final toremifene development plans for specified major markets outside the United States if those development plans could adversely affect Orion's or Orion's other licensees' activities related to FARESTON® for breast cancer outside the United States or toremifene-based animal health products. Although we do not believe that our or Ipsen's development plans adversely affect these activities, any future modifications to our or Ipsen's plans imposed by Orion may limit our and Ipsen's ability to maximize the commercial potential of toremifene.

Furthermore, we and our affiliates are prohibited from marketing or selling products containing SERM compounds (other than toremifene) for human use in the United States and other major countries located outside the European Union during the term of Orion's patents covering toremifene in such major countries, which prohibition shall expire when Orion's patents in the United States expire in September 2009. The binding effect of this noncompetition provision on us and our affiliates may make it more difficult for us to be acquired by some potential buyers during the relevant time periods even if we determine that a sale of the company would be in the best interests of our stockholders.

If some or all of our, or our licensors', patents expire or are invalidated or are found to be unenforceable, or if some or all of our patent applications do not result in issued patents or result in patents with narrow or unenforceable claims, or if we are prevented from asserting that the claims of an issued patent cover a product of a third party, we may be subject to competition from third parties with products with the same active pharmaceutical ingredients as our product candidates.

Our commercial success will depend in part on obtaining and maintaining patent and trade secret protection for our product candidates, the methods for treating patients in the product indications using these product candidates and the methods used to synthesize these product candidates. We will be able to protect our product candidates and the methods for treating patients in the product indications using these product candidates from unauthorized use by third parties only to the extent that we or our exclusive licensors own or control such valid and enforceable patents or trade secrets. Additionally, Ipsen's ability to successfully market toremifene within a substantial portion of the European Territory may depend on having marketing and data exclusivity from the appropriate regulatory authorities.

Our rights to certain patent applications relating to SARM compounds that we have licensed from the University of Tennessee Research Foundation, or UTRF, are subject to the terms of UTRF's inter-institutional agreements with The Ohio State University, or OSU, and our rights to future related improvements in some instances are subject to UTRF's exercise of exclusive options under its agreements with OSU for such improvements. In addition, under the terms of our agreements with the diagnostic companies to which we provided clinical samples from our Phase IIb and Phase III clinical trials of toremifene 20 mg tablets, we will not obtain any intellectual property rights in any of their developments, including any test developed to detect high grade PIN or prostate cancer.

Even if our product candidates and the methods for treating patients for prescribed indications using these product candidates are covered by valid and enforceable patents and have claims with sufficient scope and support in the specification, the patents will provide protection only for a limited amount of time. For example, the patent that we have licensed from Orion covering the composition of matter of toremifene expires in the United States in September 2009. Foreign counterparts of this patent have expired prior to Ipsen or us receiving regulatory approval to commercialize toremifene. As a result, outside the United States and in the United States after 2009, we will need to rely primarily on the protection afforded by method of use patents relating to the use of toremifene for the relevant product indications that have been issued or may be issued from our owned or licensed patent applications. Also, within the European Union, Ipsen may need to rely primarily on the protection afforded by marketing and data exclusivity for the toremifene products to be sold within the countries comprising the European Union. To date, many of our applications for method of use patents filed for toremifene outside of the United States are still pending and have not yielded issued patents. Loss of marketing and data exclusivity for the toremifene products to be commercialized within the European Union could adversely affect its ability to successfully commercialize these products. We are not eligible for any such exclusivity or further extension of the composition of matter patent of toremifene licensed to us by Orion in the United States.

Our and our licensors' ability to obtain patents can be highly uncertain and involve complex and in some cases unsettled legal issues and factual questions. Furthermore, different countries have different procedures for obtaining patents, and patents issued in different countries provide different degrees of protection against the use of a patented invention by others. Therefore, if the issuance to us or our licensors, in a given country, of a patent covering an invention is not followed by the issuance, in other countries, of patents covering the same invention, or if any judicial interpretation of the validity, enforceability or scope of the claims in a patent issued in one country is not similar to the interpretation given to the corresponding patent issued in another country, our ability to protect our intellectual property in those countries may be limited. Changes in either patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection.

Even if patents are issued to us or our licensors regarding our product candidates or methods of using them, those patents can be challenged by our competitors who can argue such patents are invalid or unenforceable or that the claims of the issued patents should be limited or narrowly construed. Patents also will not protect our product candidates if competitors devise ways of making or using these product candidates without legally infringing our patents. The Federal Food, Drug, and Cosmetic Act and FDA regulations and policies create a regulatory environment that encourages companies to challenge branded drug patents or to create non-infringing versions of a patented product in order to facilitate the approval of abbreviated new drug applications for generic substitutes. These same types of incentives encourage competitors to submit new drug applications that rely on literature and clinical data not prepared for or by the drug sponsor, providing another less burdensome pathway to approval.

We also rely on trade secrets to protect our technology, especially where we do not believe that patent protection is appropriate or obtainable. However, trade secrets are difficult to protect. Our employees, consultants, contractors, outside scientific collaborators and other advisors may unintentionally or willfully disclose our confidential information to competitors, and confidentiality agreements may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. Enforcing a claim that a third party illegally obtained and is using our trade secrets is expensive and time-consuming, and the outcome is unpredictable. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how. Failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

If we lose our licenses from Orion and UTRF, we may be unable to continue our business.

We have licensed intellectual property rights and technology from Orion and UTRF under our license agreements with each of them. Each of these license agreements may be terminated by the other party if we are in breach of our obligations under, or fail to perform any terms of, the agreement and fail to cure that breach. If any of these agreements were terminated, then we may lose our rights to utilize the technology and intellectual property covered by that agreement to market, distribute and sell our licensed products, which may prevent us from continuing our business. Additionally, the termination of our UTRF license related to SARM technology could lead to a termination of our exclusive license and collaboration agreement with Merck, which would terminate our rights to any potential milestone or royalty payments from Merck. In addition, the termination of our UTRF license for chemoprevention of prostate cancer could lead to a termination of our license and collaboration agreement with Ipsen, which would terminate our rights to any potential milestone or royalty payments from Ipsen.

Off-label sale or use of toremifene products could decrease sales of toremifene 80 mg and toremifene 20 mg tablets if approved for commercial sale and could lead to pricing pressure if such products become available at competitive prices and in dosages that are appropriate for the indications for which we and Ipsen are developing toremifene.

In all countries in which we hold or have licensed rights to patents or patent applications related to toremifene, the composition of matter patents we license from Orion will expire before our method of use patents, and in countries outside the United States, the composition of matter patents have already expired. Our method of use patents may not protect toremifene from the risk of off-label sale or use of other toremifene products in place of toremifene 80 mg and toremifene 20 mg tablets. Physicians are permitted to prescribe legally available drugs for uses that are not described in the drug's labeling and that differ from those uses tested and approved by the FDA or its equivalent. Such off-label uses are common across medical specialties and are particularly prevalent for cancer treatments. Any off-label sales of toremifene may adversely affect our or Ipsen's ability to generate revenue from the sale of toremifene 80 mg and 20 mg tablets, if approved for commercial sale.

Even in the event that patents are issued from our pending method of use patent applications, after the expiration of the patent covering the composition of matter of toremifene in a particular country, competitors could market and sell toremifene products for uses for which FARESTON® has already been approved. Thus, physicians in such countries would be permitted to prescribe these other toremifene products for indications that are protected by our method of use patents or patents issuing from pending patent applications, even though these other toremifene products would not have been approved for those uses, and in most cases, the physician would not be liable for contributing to the infringement of our patents. Moreover, because Orion has licensed and could further license other parties to market, sell and distribute toremifene for breast cancer outside the United States, physicians in such countries could prescribe these products sold pursuant to another Orion license off-label. This further increases the risk of off-label competition developing for toremifene for the indications for which we and Ipsen are developing this product candidate. In addition, if no patents are issued with respect to our pending method of use patent applications related to the use of toremifene in the countries outside of the United States where these applications are currently pending, after the expiration of the patent covering the composition of matter of toremifene in a particular country, we would have no patent to prevent competitors from marketing and selling generic versions of toremifene at doses and in formulations equivalent to toremifene 80 mg and toremifene 20 mg tablets for the indications covered by our pending method of use patent applications. Also, regulatory authorities may not recognize marketing and data exclusivity for toremifene in the European Union for the treatment of prostate cancer and estrogen deficiency related side effects resulting from ADT. If generic versions of toremifene are able to be sold in countries within the European Territory for the indications for which Ipsen anticipates marketing toremifene, the royalties to be paid to us by Ipsen will be reduced if the total generic sales exceed a certain threshold for a certain period of time. Similarly, the royalties we will be paying to Orion for its licensing and supply of toremifene will be reduced if generic sales thresholds are reached.

If we infringe intellectual property rights of third parties, it may increase our costs or prevent us from being able to commercialize our product candidates.

There is a risk that we are infringing the proprietary rights of third parties because numerous United States and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields that are the focus of our drug discovery, development, and manufacture and process synthesis efforts. Others might have been the first to make the inventions covered by each of our or our licensors' pending patent applications and issued patents and might have been the first to file patent applications for these inventions. In addition, because patent applications can take many years to issue, there may be currently pending applications, unknown to us or our licensors, which may later result in issued patents that cover the production, manufacture, synthesis, commercialization, formulation or use of our product candidates. In addition, the production, manufacture, synthesis, commercialization, formulation or use of our product candidates may infringe existing patents of which we are not aware. Defending ourselves against third-party claims, including litigation in particular, would be costly and time consuming and would divert management's attention from our business, which could lead to delays in our development or commercialization efforts. If third parties are successful in their claims, we might have to pay substantial damages or take other actions that are adverse to our business.

As a result of intellectual property infringement claims, or to avoid potential claims, we might:

- be prohibited from selling or licensing any product that we and/or collaborators may develop unless the patent holder licenses the patent to us, which the patent holder is not required to do;
- be required to pay substantial royalties or grant a cross license to our patents to another patent holder; or
- be required to redesign the formulation of a product candidate so it does not infringe, which may not be possible or could require substantial funds and time.

In addition, under our collaboration and license agreement with Ipsen and our exclusive license and collaboration agreement with Merck, Ipsen and Merck may be entitled to offset a portion of any royalties due to us in any calendar year on account of product sales to pay for costs incurred by Ipsen or Merck to obtain a license to any dominant intellectual property rights that are infringed by the products at issue.

Risks Related to Regulatory Approval of Our Product Candidates

If we or our collaborators are not able to obtain required regulatory approvals, we or our collaborators will not be able to commercialize our product candidates, and our ability to generate revenue will be materially impaired.

Our product candidates and the activities associated with their development and commercialization are subject to comprehensive regulation by the FDA, other regulatory agencies in the United States and by comparable authorities in other countries. Failure to obtain regulatory approval for a product candidate will prevent us or our collaborators from commercializing the product candidate. We have not received regulatory approval to market any of our product candidates in any jurisdiction. In addition, we will not receive a substantial majority of the milestone payments provided under our collaboration and license agreement with Ipsen or any royalty payments if Ipsen is unable to obtain the necessary regulatory approvals to commercialize toremifene within the European Territory. Likewise, we may not receive a majority of the milestone payments or any royalty payments provided for under our exclusive license and collaboration agreement with Merck if Merck is not able to obtain the necessary regulatory approvals to commercialize any SARM products, including Ostarine™, developed under the collaboration. The process of obtaining regulatory approvals is expensive, often takes many years, if approval is obtained at all, and can vary substantially based upon the type, complexity and novelty of the product candidates involved.

Changes in the regulatory approval policy during the development period, changes in or the enactment of additional regulations or statutes, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. For example, the Food and Drug Administration Amendments Act of 2007, or the FDA Amendments Act, which was enacted in September 2007, expands the FDA's authority to regulate drugs throughout the product life cycle, including enhanced authority to require post-approval studies and clinical trials. Other proposals have been made to impose additional requirements on drug approvals, further expand post-approval requirements and restrict sales and promotional activities. This new legislation, and the additional

proposals if enacted, may make it more difficult or burdensome for us or our collaborators to obtain approval of our product candidates. Even if the FDA approves a product candidate, the approval may impose significant restrictions on the indicated uses, conditions for use, labeling, advertising, promotion, marketing and/or production of such product, and may impose ongoing requirements for post-approval studies, including additional research and development and clinical trials. The approval may also impose risk evaluation mitigation strategies, or REMS, on a product if the FDA believes there is a reason to monitor the safety of the drug in the market place. REMS may include requirements for additional training for health care professionals, safety communication efforts and limits on channels of distribution, among other things. The sponsor would be required to evaluate and monitor the various REMS activities and adjust them if need be. The FDA also may impose various civil or criminal sanctions for failure to comply with regulatory requirements, including withdrawal of product approval.

Furthermore, the approval procedure and the time required to obtain approval varies among countries and can involve additional testing beyond that required by the FDA. Approval by one regulatory authority does not ensure approval by regulatory authorities in other jurisdictions.

The FDA has substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical, clinical or other studies. For example, we completed our Phase III clinical trial of toremifene 80 mg for the prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer and are conducting our Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, under Special Protocol Assessments, or SPAs, with the FDA. A SPA is designed to facilitate the FDA's review and approval of drug products by allowing the FDA to evaluate the proposed design and size of clinical trials that are intended to form the primary basis for determining a drug product's efficacy. If agreement is reached with the FDA, a SPA documents the terms and conditions under which the design of the subject trial will be adequate for submission of the efficacy and human safety portion of a NDA. However, there are circumstances under which we may not receive the benefits of a SPA, notably if the FDA subsequently identifies a substantial scientific issue essential to determining the product's safety or efficacy. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent regulatory approval of a product candidate. Furthermore, even if we submit an application to the FDA for marketing approval of a product candidate, it may not result in marketing approval from the FDA.

We may not receive regulatory approval for the commercial sale of any of our product candidates that are in development for at least the next several months, if ever. In February 2009, however, we completed an initial step in the approval process in the United States when the FDA accepted for filing our application to market toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT. This acceptance means the application met the FDA's standards for conducting a full review but does not predict whether the application will be approved or not. Similarly, it is not anticipated that Ipsen will receive the appropriate regulatory approvals to market toremifene within the European Territory any sooner than we will achieve regulatory approval in the United States, and it likely will be thereafter. The inability to obtain FDA approval or approval from comparable authorities in other countries for our product candidates would prevent us or our collaborators from commercializing these product candidates in the United States or other countries. See the section entitled "Business - Government Regulation" under Part I, Item 1 above for additional information regarding risks associated with marketing approval, as well as risks related to post-approval requirements.

Risks Related to Commercialization

The commercial success of any products that we and/or our collaborators may develop, including our toremifene products, will depend upon the market and the degree of market acceptance among physicians, patients, healthcare payors and the medical community.

Any products that we and/or our collaborators may develop may not gain market acceptance among physicians, patients, health care payors and the medical community. If these products do not achieve an adequate level of acceptance, we may not generate material product revenues or receive royalties to the extent we currently anticipate, and we may not become profitable. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including:

- efficacy and safety results in clinical trials;
- the prevalence and severity of any side effects;
- potential advantages over alternative treatments;
- the ability to offer our product candidates for sale at competitive prices;
- relative convenience and ease of administration;
- the strength of marketing and distribution support; and
- sufficient third-party coverage or reimbursement.

As part of our effort to complete the requirements for the submission of applications for regulatory approval of toremifene 80 mg and toremifene 20 mg, we have conducted a number of studies of toremifene in addition to our clinical trials, including a Thorough QT study (toremifene 80 mg and toremifene 20 mg), a bioequivalence study (toremifene 80 mg) and a series of drug-drug interaction studies (toremifene 80 mg and toremifene 20 mg), and are conducting a semen quality study (toremifene 20 mg) to assess the effect of toremifene. The results of the Thorough QT study of 250 healthy male volunteers, with 5 parallel cohorts receiving 20 mg, 80 mg or 300 mg doses of toremifene, moxifloxacin, or placebo, showed that toremifene prolonged the QT interval in a dose dependent manner. The mean change in QTcB (a measurement of QT interval corrected by Bazett's formula) from baseline relative to placebo for toremifene 20 mg was 5.79 milliseconds, for toremifene 80 mg, it was 22.43 milliseconds, and for moxifloxacin, it was 8.83 milliseconds. Since we market FARESTON® in the United States under a license agreement with Orion, we notified the FDA of the Thorough QT study results and have proposed modifications to the FARESTON® label in the United States. FDA action on the proposed label changes is pending. Separately, Orion recommended label changes to the European Medicines Agency, or EMEA. In January 2009, the EMEA recommended that the FARESTON® label within the European Union reflect that toremifene should not be given to patients at risk of prolonged QT intervals or other certain heart problems. The results of these completed studies have been included as a part of the NDA submission to the FDA for our toremifene 80 mg product candidate for the prevention of bone fractures in men with prostate cancer on ADT and, subject to receipt of favorable results from our ongoing toremifene 20 mg Phase III clinical trial, will be included as a part of the NDA submission for our toremifene 20 mg product candidate for the prevention of prostate cancer in high risk men with high grade PIN, and will be used to update the label for FARESTON®. The study results could lead to the inclusion of restrictions, limitations and/or warnings in the label of FARESTON® or an approved product candidate, which may adversely affect the marketability of the product or limit the patients to whom the product is prescribed.

Our only marketed product generating revenue is FARESTON®, which is subject to a number of risks. These risks may cause sales of FARESTON® to continue to decline.

FARESTON® is currently our only marketed product. The sales volume of FARESTON® in the United States has been declining, and we anticipate that it will continue to do so. Sales of pharmaceuticals for breast cancer in the SERM class have declined in recent years as aromatase inhibitors have gained market share. We believe that aromatase inhibitors will continue to capture breast cancer market share from SERMs, including from FARESTON®, resulting in a continued decline in FARESTON® sales volume. Continued sales of FARESTON® also could be impacted by many other factors. The occurrence of one or more of the following risks may cause sales of FARESTON® to decline more than we currently anticipate:

- the loss of the availability of Orion's website to market FARESTON®, which is an important source of advertising;
- the loss of one or more of our three largest wholesale drug distributors, which together accounted for approximately 96% of our product sales of FARESTON® for the year ended December 31, 2008;
- any restrictions, limitations, and/or warnings added to the FARESTON® label as a result of our studies of toremifene, including a Thorough QT study and drug interaction studies, or otherwise;
- the continued success of competing products, including aromatase inhibitors;

- the loss of coverage or reimbursement for FARESTON® from Medicare and Medicaid, private health insurers or other third-party payors;
- exposure to product liability claims related to the commercial sale of FARESTON®, which may exceed our product liability insurance;
- the failure of Orion to maintain regulatory filings or comply with applicable FDA requirements with respect to FARESTON®;
- the ability of third parties to market and sell generic toremifene products that will compete with FARESTON® for the treatment of breast cancer after the composition of matter patents that we license from Orion expire in the United States in September 2009;
- the loss of Orion, upon which we rely as a single source, as our supplier of FARESTON®; and
- our inability to manufacture FARESTON® until Orion's patents with respect to the composition of matter of toremifene expire if Orion terminates our license and supply agreement due to our uncured material breach or bankruptcy.

If we are unable to expand our sales and marketing capabilities or establish and maintain agreements with third parties to market and sell our product candidates, we may be unable to generate product revenue from such candidates.

We have limited experience as a company in the sales, marketing and distribution of pharmaceutical products. There are risks involved with building our own sales and marketing capabilities, as well as entering into arrangements with third parties to perform these services. For example, building a sales force is expensive and time-consuming and could delay any launch of a product candidate. We are relying on Ipsen to market and distribute our toremifene product candidates through Ipsen's established sales and marketing network within the European Territory. If our collaboration and license agreement with Ipsen is terminated for any reason, our ability to sell our toremifene product candidates in the European Territory would be adversely affected, and we may be unable to develop or engage an effective sales force to successfully market and sell our toremifene product candidates in the European Territory. Currently, we do not have a partner outside of the European Territory and our success in regions other than the European Territory may be dependent on our ability to find suitable partners in other regions of the world. Similarly, we are relying on Merck for the commercialization of any SARM products developed under our collaboration with Merck, and if our exclusive license and collaboration agreement with Merck is terminated for any reason, our ability to successfully market and sell any of our SARM product candidates would be adversely affected, and we may be unable to develop or engage an effective sales force to successfully market and sell any SARM products that we may develop, including Ostarine™. In addition, to the extent that we enter into arrangements with third parties to perform sales, marketing and distribution services, our product revenues are likely to be lower than if we market and sell any products that we develop ourselves.

If we or our collaborators are unable to obtain adequate coverage and reimbursement from third-party payors for products we sell at acceptable prices, our revenues and prospects for profitability will suffer.

Many patients will not be capable of paying for any products that we and/or our collaborators may develop and will rely on Medicare and Medicaid, private health insurers and other third-party payors to pay for their medical needs. If third-party payors do not provide coverage or reimbursement for any products that we and/or our collaborators may develop, our revenues and prospects for profitability may suffer. For example, the Medicare Prescription Drug, Improvement and Modernization Act of 2003 created a prescription drug benefit program for Medicare recipients. The prescription drug program established by this legislation may have the effect of reducing the prices that we or our collaborators are able to charge for products we and/or our collaborators develop and sell through the program. This legislation may also cause third-party payors other than the federal government, including the states under the Medicaid program, to discontinue coverage for products that we and/or our collaborators may develop or to lower the amount that they pay. In addition, members of the United States Congress have stated their desire to reduce the government's cost for reimbursements of prescription drugs by amending this legislation.

State Medicaid programs generally have outpatient prescription drug coverage, subject to state regulatory restrictions, for the population eligible for Medicaid. The availability of coverage or reimbursement for prescription drugs under private health insurance and managed care plans varies based on the type of contract or plan purchased.

A primary trend in the United States health care industry is toward cost containment. In addition, in some foreign countries, particularly the countries of the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take six to twelve months or longer after the receipt of regulatory marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we or our collaborators may be required to conduct a clinical trial that compares the cost effectiveness of our product candidates or products to other available therapies. The conduct of such a clinical trial could be expensive and result in delays in our or our collaborators' commercialization efforts. Third-party payors are challenging the prices charged for medical products and services, and many third-party payors limit reimbursement for newly-approved health care products. In particular, third-party payors may limit the indications for which they will reimburse patients who use any products that we and/or our collaborators may develop or sell. Cost-control initiatives could decrease the price we might establish for products that we or our collaborators may develop or sell, which would result in lower product revenues or royalties payable to us.

Another development that may affect the pricing of drugs is proposed congressional action regarding drug reimportation into the United States. The Medicare Prescription Drug, Improvement and Modernization Act of 2003 gives discretion to the Secretary of Health and Human Services to allow drug reimportation into the United States under some circumstances from foreign countries, including countries where the drugs are sold at a lower price than in the United States. Proponents of drug reimportation may attempt to pass legislation which would directly allow reimportation under certain circumstances. If legislation or regulations were passed allowing the reimportation of drugs, they could decrease the price we or our collaborators receive for any products that we and/or our collaborators may develop, negatively affecting our revenues and prospects for profitability.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of any products that we may develop.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and will face an even greater risk if we commercially sell any product that we may develop. If we cannot successfully defend ourselves against claims that our product candidates or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or products;
- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- the inability to commercialize any products for which we obtain or hold marketing approvals.

We have product liability insurance that covers our clinical trials and commercial products up to a $25 million annual aggregate limit. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost and we may not be able to obtain insurance coverage that will be adequate to satisfy any liability that may arise.

If our competitors are better able to develop and market products than any products that we and/or our collaborators may develop, our commercial opportunity will be reduced or eliminated.

We face competition from commercial pharmaceutical and biotechnology enterprises, as well as from academic institutions, government agencies and private and public research institutions. Our commercial opportunities will be

reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer side effects or are less expensive than any products that we and/or our collaborators may develop. In addition, significant delays in the development of our product candidates could allow our competitors to bring products to market before us and impair our or our collaborators' ability to commercialize our product candidates.

Various products are currently marketed or used off-label for some of the diseases and conditions that we are targeting, and a number of companies are or may be developing new treatments. These product uses, as well as promotional efforts by competitors and/or clinical trial results of competitive products, could significantly diminish our or our collaborators' ability to market and sell any products that we and/or our collaborators may develop. For example, although there are no products that have been approved by the FDA for the prevention of bone fractures and treatment of estrogen deficiency related side effects of ADT, we are aware of a number of drugs marketed by Eli Lilly (Evista®), Merck (Fosamax®), Sanofi-Aventis and Procter & Gamble (Actonel®), Wyeth Pharmaceuticals (Effexor®), Boehringer Ingelheim (Catapres®), Novartis (Zometa®) and Bristol Myers Squibb (Megace®) that are prescribed to treat single side effects of androgen deprivation therapy; that external beam radiation and tamoxifen are used to treat breast pain and enlargement, or gynecomastia; and that Amgen is developing a product candidate for the treatment of osteoporosis in prostate cancer patients. While we have the only pharmaceutical product in clinical development to prevent prostate cancer in high risk men with high grade PIN, GlaxoSmithKline is conducting a Phase III study for Avodart® on prostate cancer prevention in men with elevated prostate specific antigen. Additionally, recent literature has suggested that finasteride may be effective in reducing the risk of prostate cancer progression, and there are nutritional supplement studies (for example, selenium) investigating prostate cancer prevention in men with high grade PIN. Similarly, while there are no drugs that have been approved by the FDA for the treatment of muscle loss from cancer, there are drugs marketed by Steris Laboratories and Savient Pharmaceuticals that are being prescribed off-label for the treatment of some types of muscle loss from cancer. Testosterone and other anabolic agents are used to treat involuntary weight loss in patients who have acute muscle loss. There are other SARM product candidates in development that may compete with our product candidates. Wyeth and Amgen have myostatin inhibitors in development which may compete for similar patients as Ostarine™. This could result in reduced sales and pricing pressure on our product candidates, if approved, which in turn would reduce our ability to generate revenue and have a negative impact on our results of operations.

Many of our competitors have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies and technology licenses complementary to our programs or advantageous to our business.

Risks Related to Employees and Growth

If we fail to attract and keep senior management and key scientific personnel, we may be unable to successfully develop or commercialize our product candidates.

Our success depends on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel and on our ability to develop and maintain important relationships with leading academic institutions, clinicians and scientists. If we are not able to attract and keep senior management and key scientific personnel, particularly Dr. Mitchell S. Steiner, we may not be able to successfully develop or commercialize our product candidates. All of our employees are at-will employees and can terminate their employment at any time. We do not carry "key person" insurance covering members of senior management, other than $25 million of insurance covering Dr. Steiner.

We will need to hire additional employees in order to continue our clinical trials and commercialize our product candidates. Any inability to manage future growth could harm our ability to commercialize our product candidates, increase our costs and adversely impact our ability to compete effectively.

In order to continue our clinical trials and commercialize our product candidates, we will need to expand the number of our managerial, operational, financial and other employees. We currently anticipate that we will need between 100 and 200 additional employees by the time toremifene 80 mg or toremifene 20 mg is initially commercialized, including approximately 65 sales consultants. The competition for qualified personnel in the biotechnology field is intense.

Future growth will impose significant added responsibilities on members of management, including the need to identify, recruit, maintain and integrate additional employees. Our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively.

Risks Related to Our Common Stock

Market volatility may cause our stock price and the value of your investment to decline.

The market prices for securities of biotechnology companies in general have been highly volatile and may continue to be so in the future. The following factors, in addition to other risk factors described in this section, may have a significant impact on the market price of our common stock:

- adverse results or delays in our clinical trials;
- the timing of achievement of our and our collaborators' clinical, regulatory and other milestones, such as the commencement of clinical development, the completion of a clinical trial or the receipt of regulatory approval;
- announcement of FDA approval or non-approval of our product candidates or delays in the FDA review process;
- actions taken by regulatory agencies with respect to our product candidates or products, our clinical trials or our sales and marketing activities, including regulatory actions requiring or leading to restrictions, limitations and/or warnings in the label of FARESTON® or an approved product candidate;
- the commercial success of any product approved by the FDA or its foreign counterparts;
- developments with respect to our collaborations with Ipsen and Merck;
- market conditions for equity investments in general, or the biotechnology or pharmaceutical industries in particular;
- the terms and timing of any collaborative, licensing or other arrangements that we may establish;
- regulatory developments in the United States and foreign countries;
- changes in the structure of health care payment systems;
- any intellectual property infringement lawsuit involving us;
- announcements of technological innovations or new products by us or our competitors;
- actual or anticipated fluctuations in our results of operations;
- changes in financial estimates or recommendations by securities analysts;
- sales of large blocks of our common stock;
- sales of our common stock by our executive officers, directors and significant stockholders;
- changes in accounting principles; and
- the loss of any of our key scientific or management personnel.

The stock markets in general, and the markets for biotechnology stocks in particular, have experienced significant volatility that has often been unrelated to the operating performance of particular companies. Recently,

the financial markets have faced almost unprecedented turmoil, resulting in a decline in investor confidence and concerns about the proper functioning of the securities markets, which decline in general investor confidence has resulted in depressed stock prices for many companies not withstanding the lack of a fundamental change in their underlying business models or prospects. These broad market fluctuations may adversely affect the trading price of our common stock. In the past, class action litigation has often been instituted against companies whose securities have experienced periods of volatility in market price. Any such litigation brought against us could result in substantial costs, which would hurt our financial condition and results of operations and divert management's attention and resources, which could result in delays of our clinical trials or commercialization efforts.

Our executive officers, directors and largest stockholders have the ability to control all matters submitted to stockholders for approval.

As of January 31, 2009, our executive officers, directors and holders of 5% or more of our outstanding common stock beneficially owned approximately 76.5% of our outstanding common stock, and our executive officers and directors alone beneficially owned approximately 47.5% of our outstanding common stock. As a result, these stockholders, acting together, will be able to control all matters requiring approval by our stockholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of this group of stockholders may not always coincide with our interests or the interests of other stockholders.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our certificate of incorporation and our bylaws may delay or prevent an acquisition of us or a change in our management. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our Board of Directors. Because our Board of Directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. These provisions include:

- a classified Board of Directors;
- a prohibition on actions by our stockholders by written consent;
- the ability of our Board of Directors to issue preferred stock without stockholder approval, which could be used to institute a "poison pill" that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our Board of Directors; and
- limitations on the removal of directors.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. Finally, these provisions establish advance notice requirements for nominations for election to our Board of Directors or for proposing matters that can be acted upon at stockholder meetings. These provisions would apply even if the offer may be considered beneficial by some stockholders.

If there are substantial sales of our common stock, the market price of our common stock could drop substantially, even if our business is doing well.

For the 12-month period ended December 31, 2008, the average daily trading volume of our common stock on the NASDAQ Global Market was approximately 298,611 shares. As a result, future sales of a substantial number of shares of our common stock in the public market, or the perception that such sales may occur, could adversely affect the then-prevailing market price of our common stock. As of December 31, 2008, we had 36,392,443 shares of common stock outstanding.

Moreover, J.R. Hyde, III, and Oracle Partners, L.P., two of our largest stockholders, and their affiliates, have rights, subject to some conditions, to require us to file registration statements covering the approximately 10.8 million shares of common stock they hold in the aggregate which are subject to registration rights or to include these

shares in registration statements that we may file for ourselves or other stockholders. In addition, we filed a registration statement covering the 1,285,347 shares of common stock that we issued to Merck in December 2007. Finally, all shares of common stock that we may issue under our employee benefit plans can be freely sold in the public market upon issuance.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We sublease approximately 53,000 square feet of laboratory and office space at 3 North Dunlap Street, Memphis, Tennessee, under an operating lease through December 31, 2008 with an option to extend the sublease for up to two additional years. We have exercised an option to extend the sublease until December 31, 2009. We are working with the landlord to add additional options to extend the term of this sublease. This sublease is terminable by either party on 90 days' notice. In December 2007, we entered into a sublease for approximately 31,000 square feet of additional office space at 175 Toyota Plaza, Memphis, Tennessee, under an operating lease through April 30, 2015. We have an option to cancel this sublease beginning December 31, 2010. In July 2008, we amended the sublease to add approximately 22,000 square feet of additional office space in Memphis, Tennessee through April 30, 2015. We have an option to cancel the sublease for this additional space on December 31, 2012.

ITEM 3. LEGAL PROCEEDINGS

We are not currently involved in any material legal proceedings.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

Not applicable.

PART II

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

Market for Registrant's Common Equity

Our common stock began trading on The NASDAQ Global Market under the symbol "GTXI" on February 3, 2004. The following table presents, for the periods indicated, the high and low closing sales prices per share of our common stock as reported on The NASDAQ Global Market.

	2008		2007	
	High	Low	High	Low
First Quarter	$ 17.59	$ 10.79	$ 22.95	$ 15.83
Second Quarter	18.32	14.25	23.38	16.19
Third Quarter	20.03	14.40	18.36	14.25
Fourth Quarter	18.80	13.00	18.19	13.67

On February 26, 2009, the closing price of our common stock as reported on The NASDAQ Global Market was $9.61 per share and there were approximately 71 holders of record of our common stock.

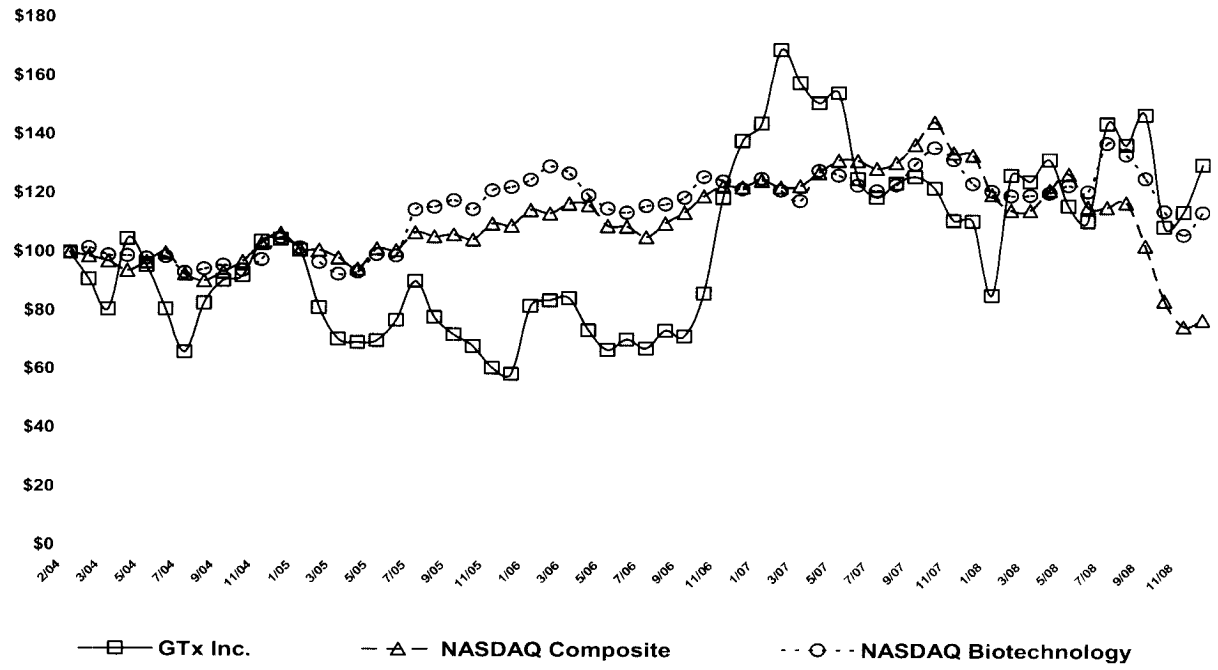
Performance Graph[1]

The rules of the SEC require that we include in our annual report to stockholders a line-graph presentation comparing cumulative stockholder returns on our common stock with a broad equity market index that includes companies whose equity securities are traded on the NASDAQ and either a published industry or line-of-business standard index or an index of peer companies selected by us. We have elected to use the NASDAQ Composite Index (which tracks the aggregate price performance of equity securities of companies traded on NASDAQ) and the NASDAQ Biotechnology Index (consisting of a group of approximately 130 companies in the biotechnology sector, including us) for purposes of the performance comparison that appears below.

The following graph shows the cumulative total stockholder return assuming the investment of $100.00 at the closing prices on February 3, 2004, the first day of trading of our common stock on the NASDAQ Global Market: (1) our common stock; (2) NASDAQ Composite Index and (3) NASDAQ Biotechnology Index. All values assume reinvestment of the full amounts of all dividends. No dividends have been declared on our common stock. The closing sale price of our common stock on December 31, 2008 as reported on the NASDAQ Global Market was $16.84.

The stockholder return shown on the graph below is not necessarily indicative of future performance, and we do not make or endorse any predictions as to future stockholder returns.

COMPARISON OF 59 MONTH CUMULATIVE TOTAL RETURN*
Among GTx Inc., The NASDAQ Composite Index
And The NASDAQ Biotechnology Index



*$100 invested on 2/3/04 in stock or on 1/31/04 in index-including reinvestment of dividends.
Fiscal year ending December 31.

[1] The material in this section is not "soliciting material," is not deemed filed with the SEC and is not to be incorporated by reference in any filing of GTx, Inc. under the Securities Act of 1933 or the Exchange Act whether made before or after the date hereof and irrespective of any general incorporation language in such filing.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain any future earnings to fund the development and expansion of our business, and therefore we do not anticipate paying cash dividends on our common stock in the foreseeable future. Any future determination to pay dividends will be at the discretion of our Board of Directors.

ITEM 6. SELECTED FINANCIAL DATA

You should read the selected financial data below in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the audited financial statements, notes thereto and other financial information included elsewhere in this Annual Report on Form 10-K. The statements of operations data for the years ended December 31, 2008, 2007 and 2006, and the balance sheet data as of December 31, 2008 and 2007, are derived from our audited financial statements included elsewhere in this Annual Report on Form 10-K. The statements of operations data for the years ended December 31, 2005 and 2004, and the consolidated balance sheet data as of December 31, 2006, 2005 and 2004, are derived from our audited financial statements that are not included in this Annual Report on Form 10-K. Historical results are not indicative of the results to be expected in the future.

	Years Ended December 31,				
	2008	2007	2006	2005	2004
	(in thousands, except per share data)				
Statement of Operations Data:					
Revenues:					
Product sales, net	$ 1,088	$ 1,076	$ 1,357	$ 2,445	$ –
Total collaboration revenue	12,440	6,050	6,148	1,337	1,867
Total revenues	13,528	7,126	7,505	3,782	1,867
Operating expenses:					
Cost of product sales	649	621	773	1,573	–
Research and development expenses	44,259	38,508	33,897	30,923	17,950
General and administrative expenses	23,105	13,501	11,352	9,845	7,211
Loss from operations	(54,485)	(45,504)	(38,517)	(38,559)	(23,294)
Interest income	2,705	5,145	3,007	1,720	946
Net loss	(51,780)	(40,359)	(35,510)	(36,839)	(22,348)
Accrued preferred stock dividends	–	–	–	–	(455)
Adjustment to preferred stock redemption value	–	–	–	–	17,125
Net loss attributable to common stockholders	$ (51,780)	$ (40,359)	$ (35,510)	$ (36,839)	$ (5,678)
Net loss per share attributable to common stockholders:					
Basic	$ (1.43)	$ (1.16)	$ (1.14)	$ (1.42)	$ (0.25)
Diluted	$ (1.43)	$ (1.16)	$ (1.14)	$ (1.42)	$ (0.93)

	As of December 31,				
	2008	2007	2006	2005	2004
			(in thousands)		
Balance Sheet Data:					
Cash, cash equivalents and short-term investments	$ 97,667	$ 100,178	$ 119,550	$ 74,014	$ 64,528
Working capital	79,047	132,932	111,363	70,030	61,298
Total assets	108,109	159,730	129,255	82,811	73,082
Accumulated deficit	(321,918)	(270,138)	(229,779)	(194,269)	(157,430)
Total stockholders' equity	32,018	78,917	97,049	73,579	63,909

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 our financial statements and related notes included elsewhere in this Annual Report on Form 10-K. This discussion contains forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results and the timing of selected events could differ materially from those anticipated in these forward-looking statements as a result of several factors, including those set forth under Part I, Item 1A "Risk Factors" and elsewhere in this Annual Report on Form 10-K. See "Special Note Regarding Forward-Looking Statements" in this Annual Report on Form 10-K.

Overview

We are a biopharmaceutical company dedicated to the discovery, development and commercialization of small molecules that selectively target hormone pathways to treat cancer, osteoporosis and bone loss, muscle loss and other serious medical conditions. We are developing toremifene citrate, a selective estrogen receptor modulator, or SERM, in two separate clinical programs in men: first, toremifene 80 mg in a completed pivotal Phase III clinical trial for the prevention of bone fractures and treatment of other estrogen deficiency side effects of androgen deprivation therapy, or ADT, in men with prostate cancer, and second, toremifene 20 mg in an ongoing pivotal Phase III clinical trial for the prevention of prostate cancer in high risk men with precancerous prostate lesions called high grade prostatic intraepithelial neoplasia, or high grade PIN.

We commenced a pivotal Phase III clinical trial of toremifene 80 mg under a Special Protocol Assessment, or SPA, with the U.S. Food and Drug Administration, or FDA, for the prevention of bone fractures and treatment of estrogen deficiency related side effects of ADT in men with prostate cancer in November 2003. The last patient completed the ADT clinical trial in November 2007. In the first quarter of 2008, we announced that the Phase III clinical trial results for toremifene 80 mg for the prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer showed that toremifene 80 mg reduced new morphometric vertebral fractures, met other key endpoints of bone mineral density, or BMD, lipid profiles and gynecomastia, and also showed that toremifene 80 mg demonstrated a reduction in hot flashes in a subset of patients. In December 2008, we submitted a New Drug Application, or NDA, for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT, which has been accepted for filing and review by the FDA.

In January 2005, we initiated a pivotal Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, which is being conducted under a SPA with the FDA. A planned efficacy interim analysis was conducted in the second quarter of 2008 that did not reach the specified statistical outcome of $p<0.003$ required under the SPA. We anticipate conducting a planned efficacy analysis after a certain number of additional cancer events have been recorded among study patients, which we currently expect to occur in the summer of 2009. If the efficacy analysis achieves a prespecified statistical goal, we plan to submit a NDA to the FDA. If we are able to submit a NDA based on the results of the planned efficacy analysis, we will continue the study to collect efficacy data and safety data during the NDA review process to satisfy the FDA's safety requirements set forth in the SPA. If the results from the efficacy analysis do not satisfy the specified statistical requirements, we will make a final determination about the continuation of the toremifene 20 mg Phase III clinical trial.

We have licensed to Ipsen Developments Limited (formerly known as Ipsen Limited), or Ipsen, exclusive rights in the European Union, Switzerland, Norway, Iceland, Lichtenstein and the Commonwealth of Independent States, which we refer to collectively as the European Territory, to develop and commercialize toremifene in all indications which we have licensed from Orion Corporation, or Orion, which include all indications in humans except the treatment and prevention of breast cancer outside of the United States.

In our third clinical program, selective androgen receptor modulators, or SARMs, are being developed to treat sarcopenia, which is the loss of skeletal muscle mass resulting in reduced physical strength and ability to perform activities of daily living, cancer cachexia (cancer induced muscle loss), and other musculoskeletal wasting or muscle loss conditions. In December 2006, we announced that Ostarine™ (designated by Merck as MK-2866) met its primary endpoint in a Phase II proof of concept, double blind, randomized, placebo controlled clinical trial in 60 elderly men and 60 postmenopausal women. In December 2007, we and Merck & Co., Inc., or Merck, entered into

a collaboration agreement governing our and Merck's joint research, development and commercialization of SARM compounds and related SARM products, including SARMs currently being developed by us and Merck and those yet to be discovered, for all indications of interest. We and Merck are evaluating multiple SARM product candidates, including Ostarine™ and MK-0773, for a variety of indications including sarcopenia and cancer cachexia. In October 2008, we announced topline results of a Phase II clinical trial evaluating Ostarine™ in patients with cancer cachexia. In this analysis, the study met its primary endpoint of absolute change in total lean body mass (muscle) compared to placebo and the secondary endpoint of muscle function (performance) after 16 weeks of treatment in 159 cancer patients with reported weight loss. In 2009, we and Merck expect to complete an ongoing Phase II clinical trial evaluating MK-0773 in sarcopenia and expect to initiate a clinical trial evaluating Ostarine™ in cancer cachexia. We and Merck are evaluating additional muscle loss indications for potential SARM clinical development.

We are developing GTx-758, an oral luteinizing hormone, or LH, inhibitor for the treatment of advanced prostate cancer. In preclinical *in vitro* and *in vivo* models, GTx-758 has demonstrated the potential to reduce testosterone to castrate levels without causing certain estrogen deficiency side effects such as bone loss and hot flashes. We have initiated a Phase I clinical trial evaluating GTx-758 in healthy volunteers in the first quarter of 2009. We further expect to establish proof of concept for GTx-758 with a Phase I multiple ascending dose clinical trial that we are planning to initiate in the second quarter of 2009 and conclude in the fourth quarter of 2009. We also have an extensive preclinical pipeline generated from our own discovery program, including GTx-878, an estrogen receptor beta agonist.

We currently market FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in postmenopausal women in the United States. The active pharmaceutical ingredient in FARESTON® is the same as in our toremifene 80 mg and toremifene 20 mg product candidates.

Our net loss for the year ended December 31, 2008 was $51.8 million. Our net loss included FARESTON® net product sales of $1.1 million and the recognition of collaboration revenue of $12.4 million. We have financed our operations and internal growth primarily through public offerings and private placements of our common stock and preferred stock, as well as proceeds from our collaborations. We expect to continue to incur net losses as we continue our clinical development and research and development activities, apply for regulatory approvals, expand our sales and marketing capabilities and grow our operations.

Sales and Marketing

We currently market FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in postmenopausal women in the United States. The active pharmaceutical ingredient in FARESTON® is the same as in our toremifene 80 mg and toremifene 20 mg product candidates, but in a different dose. In January 2005, we acquired from Orion the right to market FARESTON® tablets in the United States for the metastatic breast cancer indication. We also acquired from Orion a license to toremifene for all indications in humans worldwide, except breast cancer outside of the United States. In order to commercialize any future products, we must broaden our sales and marketing infrastructure or collaborate with third parties with sales and marketing experience and personnel. We plan to build a specialty sales and marketing infrastructure, which we expect to include approximately 65 sales consultants, to market toremifene 80 mg and toremifene 20 mg, if approved by the FDA, to the relatively small and concentrated community of urologists and medical oncologists in the United States. We have partnered with Ipsen to commercialize toremifene in Europe. We are currently seeking partners to market toremifene in Asia and other markets outside of the United States and Europe.

Research and Development

Since our inception in 1997, we have been focused on drug discovery and development programs. Research and development expenses represented 66% of our total operating expenses for the year ended December 31, 2008. Research and development expenses include our expenses for personnel associated with our research activities, screening and identification of product candidates, formulation and synthesis activities, manufacturing, preclinical studies, toxicology studies, clinical trials, regulatory affairs, quality assurance activities and license and royalty fees.

We expect that research and development expenditures will continue to increase in future periods due to:

- activities relating to our efforts to obtain regulatory approval of toremifene 80 mg for the prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer;
- the continuation of the pivotal Phase III clinical trial of toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN;
- our ongoing SARM research and development efforts with Merck as a part of our collaboration;
- the continued preclinical and clinical development of other product candidates, including GTx-758; and
- increases in research and development personnel.

There is a risk that any drug discovery and development program may not produce revenue. Moreover, because of uncertainties inherent in drug discovery and development, including those factors described in Part I, Item 1A "Risk Factors" of this Annual Report on Form 10-K, we may not be able to successfully develop and commercialize any of our product candidates.

Drug development in the United States is a process that includes several steps defined by the FDA. The FDA approval process for a new drug involves completion of preclinical studies and the submission of the results of these studies to the FDA, together with proposed clinical protocols, manufacturing information, analytical data and other information in an Investigational New Drug application which must become effective before human clinical trials may begin. Clinical development typically involves three phases of study: Phase I, II and III. The most significant costs associated with clinical development are the Phase III clinical trials as they tend to be the longest and largest studies conducted during the drug development process. After completion of clinical trials, a NDA may be submitted to the FDA. In responding to a NDA, the FDA may refuse to file the application, or if accepted for filing, the FDA may not grant marketing approval, request additional information or deny the application if it determines that the application does not provide an adequate basis for approval. Even if the FDA grants marketing approval, the FDA may impose restrictions, limitations and/or warnings in the label of an approved product candidate, which may adversely affect the marketability of the product or limit the patients to whom the product is prescribed.

The successful development and commercialization of our product candidates is highly uncertain. We cannot reasonably estimate or know the nature, timing and estimated costs of the efforts necessary to complete the development and commercialization of, or the period in which material net cash inflows are expected to commence from, any of our product candidates, including the product candidates developed and/or commercialized through our collaborations with Merck and Ipsen, due to the numerous risks and uncertainties associated with developing and commercializing drugs, including the uncertainty of:

- the scope, rate of progress and cost of our and/or our collaborators' clinical trials and other research and development activities;
- future clinical trial results;
- the achievement of certain milestone events under, and other matters related to, our collaborative arrangements with Merck and Ipsen;
- the terms and timing of any future collaborative, licensing and other arrangements that we may establish;
- the cost and timing of regulatory filings and/or approvals, and any related restrictions, limitations, and/or warnings;
- potential future licensing fees, milestone payments and royalty payments, including any milestone payments or royalty payments that we may receive under our collaborative arrangements with Merck and Ipsen;

- the cost and timing of establishing sales, marketing and distribution capabilities;

- the cost of establishing clinical and commercial supplies of our product candidates and any products that we and/or our collaborators may develop;

- the effect of competing technological and market developments; and

- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

Any failure to complete the development of our product candidates in a timely manner could have a material adverse effect on our operations, financial position and liquidity. A discussion of the risks and uncertainties associated with completing our development and commercialization efforts on schedule, or at all, and some consequences of failing to do so, are set forth under Part I, Item 1A "Risk Factors" of this Annual Report on Form 10-K.

General and Administrative Expenses

Our general and administrative expenses consist primarily of salaries and other related costs for personnel serving executive, finance, legal, human resources, information technology, investor relations and marketing functions. Other costs include facility costs not otherwise included in research and development expense and professional fees for legal, accounting, public relations, and marketing services. General and administrative expenses also include insurance costs and FARESTON® selling and distribution expenses. We expect that our general and administrative expenses will increase in future periods as we add personnel, additional office space and other expenses to support the planned growth of our business. In addition, we plan to expand our sales and marketing efforts which will result in increased sales and marketing expenses in future years.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements as well as the reported revenues and expenses during the reporting periods. On an ongoing basis, we evaluate our estimates and judgments related to revenue recognition, income taxes, intangible assets, long-term service contracts and other contingencies. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are more fully described in Note 2 to our financial statements appearing at the end of this Annual Report on Form 10-K, we believe that the following accounting policies are most critical to aid you in fully understanding and evaluating our reported financial results.

Revenue Recognition

Our revenues consist of product sales of FARESTON® and revenues derived from our collaboration and license agreements.

We use revenue recognition criteria outlined in Staff Accounting Bulletin ("SAB") No. 101, *Revenue Recognition in Financial Statements* as amended by SAB No. 104, (together, "SAB 104"), Statement of Financial Accounting Standards ("SFAS") No. 48, *Revenue Recognition When Right of Return Exists* ("SFAS No. 48"), Emerging Issues Task Force ("EITF") Issue No. 00-21, *Revenue Arrangements with Multiple Deliverables* ("EITF

00-21") and EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal Versus Net as an Agent* ("EITF 99-19"). Accordingly, revenues from licensing agreements are recognized based on the performance requirements of the agreement. We have analyzed our agreements with multiple element arrangements to determine whether the deliverables under the agreement, including license and performance obligations such as joint steering committee participation and research and development activities, can be separated or whether all of the deliverables must be accounted for as a single unit of accounting in accordance with EITF 00-21. For these arrangements, we were not able to identify evidence of fair value for the undelivered elements and therefore recognize any consideration for a single unit of accounting in the same manner as the revenue is recognized for the final deliverable, which is ratable over the performance period. The performance period is estimated at the inception of the agreement and is reevaluated at each reporting period. Cost reimbursements for research activities are recognized as collaboration revenue if the provisions of EITF 99-19 are met, the amounts are determinable and collection of the related receivable is reasonably assured. Revenues from milestone payments for which we have no continuing performance obligations are recognized upon achievement of the performance milestone, as defined in the related agreement, provided the milestone is substantive and a culmination of the earnings process has occurred. Performance obligations typically consist of significant milestones in the development life cycle of the related product candidates and technology, such as initiation of clinical trials, achievement of specified clinical trial endpoints, filing for approval with regulatory agencies and approvals by regulatory agencies.

We estimate the performance obligation period to be ten years for our collaboration agreement with Merck and five years for the development of toremifene for both the high grade PIN and ADT indications in the European Territory under our collaboration agreement with Ipsen. The factors that drive the actual development period of a pharmaceutical product are inherently uncertain and include determining the timing and expected costs to complete the project, projecting regulatory approvals and anticipating potential delays. We use all of these factors in initially estimating the economic useful lives of our performance obligations, and we also continually monitor these factors for indications of appropriate revisions

We recognize net product sales revenue from sales of FARESTON® less deductions for estimated sales discounts and sales returns. We recognize revenue from product sales when the goods are shipped and title and risk of loss pass to the customer and the other criteria of SAB No. 104 and SFAS No. 48 are satisfied. We account for rebates to certain governmental agencies as a reduction of product sales. We allow customers to return product within a specified time period prior to and subsequent to the product's labeled expiration date. As a result, we estimate an accrual for product returns, which is recorded as a reduction of product sales. We consider historical product return trend information that we continue to update each period. We estimate the number of months of product on hand and the amount of product which is expected to exceed its expiration date and be returned by the customer by receiving information from our three largest wholesale customers about the levels of FARESTON® inventory held by these customers. These three largest wholesale customers accounted for 96% of our product sales of FARESTON® for the year ended December 31, 2008. Based on this information, and other factors, we estimate an accrual for product returns. At December 31, 2008 and 2007, our accrual for product returns was $815,000 and $324,000, respectively. In the fourth quarter of 2008, we increased the price of FARESTON®. While we do not estimate a material increase in the volume of product returns as a result of the price increase, the price increase did increase the amount of the estimated product returns accrual as certain product returns are accepted at or near the current sales price of FARESTON®.

Research and Development Expenses

Research and development expenses include, but are not limited to, expenses for personnel and facilities associated with research activities, screening and identification of product candidates, formulation and synthesis activities, manufacturing, preclinical studies, toxicology studies, clinical trials, regulatory affairs, quality assurance activities and license and royalty fees. We expense these costs in the period in which they are incurred. We estimate our liabilities for research and development expenses in order to match the recognition of expenses to the period in which the actual services are received. As such, accrued liabilities related to third party research and development activities are recognized based upon our estimate of services received and degree of completion of the services in accordance with the specific third party contract.

Share-Based Compensation

We have stock option plans that provide for the purchase of our common stock by certain of our employees and directors. Effective January 1, 2006, we adopted SFAS 123(R), *Share-Based Payment*, and began recognizing compensation expense for our share-based payments based on the fair value of the awards.

The determination of the fair value of share-based payment awards on the date of grant include the expected life of the award, the expected stock price volatility over the expected life of the awards, expected dividend yield, and risk-free interest rate. We estimate the expected life of options by calculating the average of the vesting term and contractual term of the options, as allowed by SAB 110. We estimate the expected stock price volatility based on the historical volatility of our common stock. The risk-free interest rate is determined using U.S. Treasury rates where the term is consistent with the expected life of the stock options. Expected dividend yield is not considered as we have not made any dividend payments and have no plans of doing so in the foreseeable future. Forfeitures are estimated at the time of valuation and reduce expense ratably over the vesting period. This estimate is adjusted periodically based on the extent to which actual forfeitures differ, or are expected to differ, from the previous estimate.

Total share-based compensation expense for the year ended December 31, 2008 was $3.7 million, of which $1.7 million and $2.0 million were recorded in the statements of operations as research and development expenses and general and administrative expenses, respectively. Total share-based compensation expense for the years ended December 31, 2007 and 2006 was $2.2 million and $1.4 million, respectively. Included in share-based compensation expense for all periods presented is share-based compensation expense related to deferred compensation arrangements for our directors, which was $178,000, $183,000 and $140,000 for the years ended December 31, 2008, 2007 and 2006, respectively. On the date of adoption of SFAS 123R, the unamortized balance of deferred stock compensation of $1.7 million was reduced to zero with an offsetting adjustment to additional paid-in capital. At December 31, 2008, the total compensation cost related to non-vested awards not yet recognized was approximately $8.8 million with a weighted average expense recognition period of 2.42 years.

Income Taxes

We account for deferred taxes by recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Realization of deferred tax assets is dependent on future earnings, if any, the timing and amount of which is uncertain. A valuation allowance is provided when it is more likely than not that some portion or all of the deferred tax assets will not be realized. At December 31, 2008 and 2007, net of the valuation allowance, the net deferred tax assets were reduced to zero as we have incurred losses since inception and anticipate that we will incur continued losses for the foreseeable future.

Intangible Assets

We account for our intangible assets in accordance with SFAS No. 142, *Goodwill and Other Intangible Assets,* which requires that purchased intangible assets with finite lives be amortized over their estimated economic lives. Our purchased intangible assets, license fees, represent license fees paid to Orion in connection with entering into an amended and restated license and supply agreement and to UTRF in connection with entering into amended and restated license agreements. The Orion license fee is being amortized on a straight-line basis over the term of the agreement which we estimate to be 16 years. The UTRF license fees are being amortized on a straight-line basis over the term of the agreements which we estimate to be approximately 14 years and 11.5 years. In accordance with SFAS No. 144, *Accounting for the Impairment or Disposal of Long-Lived Assets and for Long-Lived Assets to be Disposed of,* we review long-lived assets for impairment whenever events or changes in facts and circumstances, both internally and externally, may indicate that an impairment of long-lived assets held for use are present. An impairment loss would be recognized when estimated future cash flows is less than the carrying amount. The cash flow estimates would be based on management's best estimates, using appropriate and customary assumptions and projections at the time.

Recent Accounting Pronouncements

In November 2007, the Emerging Issues Task Force issued EITF Issue No. 07-01, *Accounting for Collaborative Arrangements* ("EITF 07-01"). EITF 07-01 concludes that the equity method of accounting cannot be applied to collaborative arrangement activities that are not conducted within a separate legal entity. Instead, the revenues and costs incurred with third parties in connection with the collaborative arrangement should be presented gross or net by the collaborators based on the criteria in EITF 99-19, and other applicable accounting literature. EITF 07-01 is effective for years beginning after December 15, 2008. We do not expect the adoption of EITF 07-01 will have a material impact on our financial position or results of operations.

Results of Operations

Comparison of Years Ended December 31, 2008 and December 31, 2007

Revenues. Revenues for the year ended December 31, 2008 were $13.5 million as compared to $7.1 million for the same period of 2007. Revenues for the year ended December 31, 2008 included net sales of FARESTON® marketed for the treatment of metastatic breast cancer and collaboration income from Ipsen and Merck. During the years ended December 31, 2008 and 2007, FARESTON® net sales were $1.1 million for both periods, while cost of products sales were $649,000 and $621,000, respectively. Although FARESTON® net product sales for the year ended December 31, 2008 were consistent with the prior year, the current year net product sales include an increase in the average price of FARESTON® of 44% as a result of a price increase in the fourth quarter. The sales volume of FARESTON® also increased 4% for the year ended December 31, 2008 as compared to year ended December 31, 2007. The increase in net product sales due to the increase in price and volume in 2008 was offset by an increase in the provision for product returns. While we do not estimate a material increase in the volume of product returns as a result of the price increase, the price increase did increase the amount of the estimated product returns accrual as certain product returns are accepted at or near the current sales price of FARESTON®. We expect FARESTON® sales volume to decline in future periods, particularly as a result of aromatase inhibitors continuing to capture breast cancer market share from SERMs, including FARESTON®. Collaboration income was $12.4 million for the year ended December 31, 2008, which consisted of approximately $5.9 million and $5.1 million from the amortization of deferred revenue from Ipsen and Merck, respectively, and approximately $1.5 million from an earned milestone from Ipsen with the achievement of the primary endpoint in the toremifene 80 mg Phase III clinical trial. For the year ended December 31, 2007, collaboration income was $6.1 million, of which $5.9 million and $198,000 was from Ipsen and Merck, respectively.

Research and Development Expenses. Research and development expenses increased 15% to $44.3 million for the year ended December 31, 2008 from $38.5 million for the year ended December 31, 2007. The following table identifies the research and development expenses for each of our most advanced product candidates, as well as research and development expenses pertaining to our other research and development efforts for each of the periods presented. Research and development expenses for the year ended December 31, 2008 included payment of a $1.2 million fee to the FDA for the submission of the NDA for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT. This amount is included in "Toremifene 80 mg" in the table below. Additionally, research and development expenses for the year ended December 31, 2008 included a payment to UTRF of $540,000 for the execution of amendments to our existing SARM and SERM license agreements. This amount is included in "Other research and development" in the table below. Included in "Other research and development" for the year ended December 31, 2007 is a sublicense royalty of approximately $1.9 million paid to UTRF as a result of our collaboration with Merck. Research and development spending for past periods is not indicative of spending in future periods.

Program	Product Candidate/ Indication	Years Ended December 31, 2008	2007	Increase (Decrease)
		(in thousands)		
SERM	**Toremifene 80 mg** Prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer	$ 11,724	$ 9,422	$ 2,302
SERM	**Toremifene 20 mg** Prevention of prostate cancer in high risk men with high grade PIN	9,338	8,694	644
SARM	**Ostarine™** Treatment of cancer cachexia	5,973	7,056	(1,083)
LH inhibitor	**GTx-758** Treatment of advanced prostate cancer	3,786	—	3,786
Other research and development		13,438	13,336	102
Total research and development expenses		$ 44,259	$ 38,508	$ 5,751

General and Administrative Expenses. General and administrative expenses increased 71% to $23.1 million for the year ended December 31, 2008 from $13.5 million for the year ended December 31, 2007. The increase of approximately $9.6 million was primarily the result of increased personnel and personnel related expenses of approximately $4.5 million, marketing expenses of approximately $1.9 million in connection with the planned commercialization of our toremifene product candidates, medical education expenses of approximately $1.6 million, and $460,000 in losses from our investment in the Bank of America's Columbia Strategic Cash Portfolio.

Interest Income. Interest income decreased to $2.7 million for the year ended December 31, 2008 from $5.1 million for the year ended December 31, 2007. The decrease of approximately $2.4 million was attributable to lower average interest rates offset by slightly higher average cash and cash equivalents balances during the year ended December 31, 2008, as compared to the prior year.

Comparison of Years Ended December 31, 2007 and December 31, 2006

Revenues. Revenues for the year ended December 31, 2007 were $7.1 million as compared to $7.5 million for the same period of 2006. Revenues for the year ended December 31, 2007 included net sales of FARESTON® marketed for the treatment of metastatic breast cancer and collaboration income from Ipsen and Merck. During the years ended December 31, 2007 and 2006, FARESTON® net sales were $1.1 million and $1.4 million, respectively, while costs of products sales were $621,000 and $773,000, respectively. The 21% decrease in net sales of FARESTON® for the year ended December 31, 2007, as compared to the same period of 2006, was due to a decrease in sales volume of 42%, which was offset by a 7% increase in sales price and a reduction in the provision for product returns. Collaboration income was $6.1 million for the year ended December 31, 2007, of which $5.9

million and $198,000 was from Ipsen and Merck, respectively. For the year ended December 31, 2006, collaboration income was $6.1 million, of which $4.3 million and $1.8 million was from Ortho Biotech Products, L.P., a subsidiary of Johnson & Johnson, and Ipsen, respectively. In December 2006, we reacquired full rights to develop and commercialize andarine and all backup compounds previously licensed to Ortho Biotech, and our joint collaboration and license agreement with Ortho Biotech was terminated by mutual agreement of the parties. In connection with the termination of this agreement, we recognized the associated $3.1 million balance of deferred revenue as additional collaboration revenue for the year ended December 31, 2006.

Research and Development Expenses. Research and development expenses increased 13.6% to $38.5 million for the year ended December 31, 2007 from $33.9 million for the year ended December 31, 2006. The following table identifies the research and development expenses for certain of our product candidates, as well as research and development expenses pertaining to our other research and development efforts for each of the periods presented. Included in "Other research and development" for the year ended December 31, 2007 is a sublicense royalty of approximately $1.9 million paid to UTRF as a result of our collaboration with Merck. Research and development spending for past periods is not indicative of spending in future periods.

Program	Product Candidate/ Indication	Years Ended December 31, 2007	2006	Increase (Decrease)
		(in thousands)		
SERM	**Toremifene 80 mg** Prevention of bone fractures and treatment of other estrogen deficiency side effects of ADT in men with prostate cancer	$ 9,422	$ 8,446	$ 976
SERM	**Toremifene 20 mg** Prevention of prostate cancer in high risk men with high grade PIN	8,694	10,737	(2,043)
SARM	**Ostarine ™** Treatment of cancer cachexia	7,056	6,723	333
Other research and development		13,336	7,991	5,345
Total research and development expenses		$ 38,508	$ 33,897	$ 4,611

General and Administrative Expenses. General and administrative expenses increased 18.4% to $13.5 million for the year ended December 31, 2007 from $11.4 million for the year ended December 31, 2006. The increase of approximately $2.1 million was primarily the result of increased personnel related expenses of approximately $1.0 million, an increase in marketing and promotional expenses of $757,000 and an increase in intellectual property and other legal expenses of $730,000.

Interest Income. Interest income increased to $5.1 million for the year ended December 31, 2007 from $3.0 million for the year ended December 31, 2006. The increase of approximately $2.1 million was attributable to higher average interest rates in addition to higher average cash and cash equivalents balances during the year ended December 31, 2007, as compared to the prior year.

Liquidity and Capital Resources

Through December 31, 2008, we financed our operations and internal growth through private placements of preferred stock and common stock, the proceeds of our public offerings of our common stock, and proceeds from our collaborations. We have incurred significant losses since our inception in 1997 as we have devoted substantially all of our resources to research and development, including our clinical trials. As of December 31, 2008, we had an accumulated deficit of $321.9 million, of which $96.3 million related to non-cash dividends and adjustments to the preferred stock redemption value. Our accumulated deficit as of December 31, 2008 resulted primarily from:

- our research and development activities associated with:
  - toremifene 80 mg for the prevention of bone fractures and the treatment of other estrogen deficiency side effects of ADT in men with prostate cancer, including two Phase II clinical trials, a pivotal Phase III clinical trial, and the preparation and submission of a NDA to the FDA;
  - toremifene 20 mg for the prevention of prostate cancer in high risk men with high grade PIN, including our Phase IIb clinical trial and an ongoing pivotal Phase III clinical trial;
  - our ongoing SARM research efforts with Merck as part of our collaboration;
  - the continued preclinical and clinical development of other product candidates, including GTx-758;
- general and administrative expenses; and
- non-cash dividends and adjustments to the preferred stock redemption value of $96.3 million related to our cumulative redeemable convertible preferred stock, which was converted to common stock in conjunction with our initial public offering.

We expect to continue to incur net losses as we continue our clinical development and research and development activities, apply for regulatory approvals, expand our sales and marketing capabilities and grow our operations.

At December 31, 2008, we had cash, cash equivalents and short-term investments of $97.7 million, compared to $110.0 million at December 31, 2007 and $119.6 million at December 31, 2006. As of December 31, 2008, our cash and cash equivalents consisted of bank deposits and money market mutual funds which are required to comply with Rule 2a-7 under the Investment Company Act of 1940. Our short-term investments consisted of an investment in Bank of America Corporation's Columbia Strategic Cash Portfolio.

In December 2007, we entered into an exclusive license and collaboration agreement with Merck and received an upfront licensing fee of $40.0 million in January 2008. Merck also agreed to pay us $15.0 million in guaranteed cost reimbursements for research and development activities in equal annual installments over a three year period beginning on the first anniversary of the effective date of the agreement. We received the first $5.0 million payment in December 2008. We are also eligible to receive up to $422.0 million in future milestone payments associated with the development and regulatory approval of a lead product candidate, including Ostarine™, as defined in the agreement, if multiple indications are developed and receive required regulatory approvals, as well as additional milestone payments for the development and regulatory approval of other product candidates developed under the agreement, upon the achievement of such development and regulatory approval milestones and assuming the continued effectiveness of the agreement. Merck also has agreed to pay us tiered royalties on net sales of products that may be developed under the agreement. On the date the license and collaboration agreement with Merck became effective in December 2007, we issued to Merck 1,285,347 newly-issued shares of our common stock for an aggregate purchase price of approximately $30.0 million.

In September 2006, we entered into a collaboration and license agreement with Ipsen under which Ipsen paid us €21.5 million (approximately $27.1 million) as a license fee and expense reimbursement and is paying us €1.5 million in equal installments over a three year period from the date of the agreement. In September 2007, we received €500,000 (approximately $688,000) from Ipsen as the first annual installment payment. The second annual installment payment of €500,000 (approximately $711,000) was received from Ipsen in September 2008. Pursuant

to the agreement, we are also entitled to receive from Ipsen up to €39.0 million in milestone payments depending on the successful development and launch of toremifene in certain countries of the European Territory for the high grade PIN indication, subject to certain conditions, and the ADT indication. In February 2008, we earned a milestone of €1.0 million (approximately $1.5 million) with the achievement of the primary endpoint in the toremifene 80 mg Phase III clinical trial. Ipsen has agreed to pay a portion of our toremifene development costs in the United States if certain conditions are met. Under the agreement, Ipsen must elect to retain its rights to commercialize toremifene and other products containing toremifene for the high grade PIN indication.

In December 2006, we completed a public offering of 3,799,600 shares of common stock at an offering price to the public of $16.00 per share resulting in net proceeds of approximately $57.4 million.

Net cash used in operating activities was $2.9 million, $37.6 million and $11.5 million for the years ended December 31, 2008, 2007 and 2006, respectively. The use of cash in all periods resulted primarily from funding our net losses. In 2008, this was offset by the receipt of $40.0 million in conjunction with our exclusive license and collaboration agreement with Merck, approximately $1.5 million from Ipsen due to achievement of the primary endpoint in the toremifene 80 mg Phase III clinical trial, approximately $711,000 related to the second annual license fee and expense reimbursement installment payment from Ipsen in conjunction with our collaboration and license agreement with Ipsen, $5.0 million from Merck related to the first annual installment payment in conjunction with our exclusive license and collaboration agreement with Merck, and approximately $7.1 million in distributions from our investment in Bank of America Corporation's Columbia Strategic Cash Portfolio. Net cash used in operating activities for the year ended December 31, 2007 was reduced by the receipt of approximately $688,000 from Ipsen related to the first annual license fee and expense reimbursement installment payment in conjunction with our collaboration and license agreement with Ipsen. Net cash used in operating activities for the year ended December 31, 2006 was reduced by the receipt of approximately $27.1 million in connection with our collaboration with Ipsen. Cash requirements for operating activities are expected to increase in future periods, due in part to anticipated costs related to the potential commercialization of our product candidates, if approved by the FDA, the continuation of our pivotal Phase III clinical trial for toremifene 20 mg, our ongoing SARM research efforts with Merck as part of our collaboration, as well as the continued clinical and preclinical development of our other product candidates, including GTx-758.

Net cash used in investing activities for the year ended December 31, 2008 was $2.9 million and was primarily for the purchase of furniture and fixtures, leasehold improvements, office equipment, software and information technology equipment related to the addition of office space required to support our growth. Additionally, investing activities in 2008 included the purchase of research and development equipment. Net cash used in investing activities for the year ended December 31, 2007 was $1.7 million and was primarily for the purchase of research and development equipment, office equipment, computer equipment and software and the purchase of intangible assets (license fees) of $513,000. Net cash used in investing activities for 2006 was $578,000 and was primarily for the purchase of research and development equipment, computer equipment and software. We currently expect to make capital expenditures of approximately $1.3 million for the year ending December 31, 2009.

Net cash provided by financing activities was $1.2 million, $20.0 million and $57.6 million for the years ended December 31, 2008, 2007 and 2006, respectively. Net cash provided by financing activities for the year ended December 31, 2008 reflected proceeds of $1.2 million from the exercise of employee stock options offset by principal payments under a capital lease obligation. Net cash provided by financing activities for the year ended December 31, 2007 reflected proceeds of approximately $30.0 million from our private placement of 1,285,347 shares of common stock to Merck in December 2007 and proceeds of $826,000 from the exercise of employee stock options. Net cash provided by financing activities for the year ended December 31, 2006 reflected net proceeds of approximately $57.4 million from our follow-on public offering, which closed on December 18, 2006.

We estimate that our current cash and cash equivalent balances, short-term investments, interest income and product revenue from the sale of FARESTON® will be sufficient to meet our projected operating requirements through at least the next twelve months. This estimate does not include funding from future milestone payments that we may receive under our existing collaborations with Merck and Ipsen, nor does it include any funding that we may receive under potential future collaboration arrangements with other pharmaceutical companies or potential future issuances and sales of our securities.

Our forecast of the period of time through which our financial resources will be adequate to support our projected operating requirements is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors, including the factors discussed under Part I, Item 1A "Risk Factors" section of this Annual Report on Form 10-K. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and potential commercialization of our product candidates and other research and development activities, including risks and uncertainties that could impact the rate of progress of our development and commercialization activities, we are unable to estimate with certainty the amounts of increased capital outlays and operating expenditures associated with our current and anticipated clinical trials, other research and development activities, and commercialization activities. Our future funding requirements will depend on many factors, including:

- the scope, rate of progress and cost of our and/or our collaborators' clinical trials and other research and development activities;
- future clinical trial results;
- the achievement of certain milestone events under, and other matters related to, our collaborative arrangements with Merck and Ipsen;
- the terms and timing of any future collaborative, licensing and other arrangements that we may establish;
- the cost and timing of regulatory filings and/or approvals, and any related restrictions, limitations, and/or warnings;
- potential future licensing fees, milestone payments and royalty payments, including any milestone payments or royalty payments that we may receive under our collaborative arrangements with Merck and Ipsen;
- the cost and timing of establishing medical education, sales, marketing and distribution capabilities;
- the cost of establishing clinical and commercial supplies of our product candidates and any products that we and/or our collaborators may develop;
- the effect of competing technological and market developments;
- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights; and
- the extent to which we acquire or invest in businesses, products and technologies, although we currently have no commitments or agreements relating to any of these types of transactions.

Until we can generate a sufficient amount of product revenue, we expect to finance future cash needs through public or private equity offerings, debt financings or collaboration and licensing arrangements, such as our arrangements with Merck and Ipsen, as well as through interest income earned on the investment of our cash balances and short-term investments and revenues from the sale of FARESTON®. With the exception of payments that we may receive under our collaborations with Merck and Ipsen, we do not currently have any commitments for future external funding. To the extent that we raise additional funds by issuing equity securities, our stockholders may experience dilution, and debt financing, if available, may involve restrictive covenants. To the extent that we raise additional funds through collaboration and licensing arrangements, such as our arrangements with Merck and Ipsen, it may be necessary to relinquish some rights to our technologies or product candidates, or grant licenses on terms that are not favorable to us. Our ability to raise additional funds may be adversely impacted by current economic conditions, including the effects of the recent disruptions to and volatility in the credit and financial markets in the United States and worldwide, which have resulted in bankruptcy, failure, collapse or sale of various financial institutions and an unprecedented level of U.S. and other governmental intervention. As a result of these and other factors, we cannot be certain that additional funding will be available on acceptable terms, or at all. If adequate funds are not available due to the recent disruptions to and volatility in the credit and financial markets in

the United States and worldwide or other factors, we may be required to delay, reduce the scope of or eliminate one or more of our research or development programs or to obtain funds through collaborations with others that are on unfavorable terms or that may require us to relinquish rights to some of our technologies or product candidates that we would otherwise seek to develop on our own.

We have no long-term debt. At December 31, 2008, we had contractual obligations as follows:

	Payment Due by Period (in thousands)				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Capital lease obligations	$ 5	$ 5	$ —	$ —	$ —
Operating lease obligations	2,844	1,317	1,527	—	—
Purchase obligations	23	23	—	—	—
Total	$ 2,872	$ 1,345	$ 1,527	$ —	$ —

Our long-term commitments under the operating leases shown above consist of payments relating to a sublease for laboratory and office space at 3 North Dunlap Street, Memphis, Tennessee and a sublease for office space at 175 Toyota Plaza, Memphis, Tennessee. Our sublease agreement for the premises located at 3 North Dunlap Street originally expired on December 31, 2008, with options to extend for up to two additional years. We have exercised an option to extend the sublease until December 31, 2009. We amended our original sublease agreement for the premises located at 175 Toyota Plaza to add additional office space. The amended sublease includes escalating rental payments and expires on April 30, 2015. We have the ability to cancel the original sublease beginning on December 31, 2010 and to cancel the sublease for additional space on December 31, 2012. The table above excludes contingent payments under the license agreements to which we are a party.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk for changes in interest rates relates to our cash equivalents on deposit in highly liquid money market funds. The primary objective of our cash investment activities is to preserve principal while at the same time maximizing the income we receive from our invested cash without significantly increasing risk of loss. We do not use derivative financial instruments in our investment portfolio. The effect of a hypothetical decrease of ten percent in the average yield earned on our cash equivalents and short-term investments would have resulted in a decrease in our interest income of approximately $280,000 for the year ended December 31, 2008.

Our exposure to credit risk relates to our investment in money market funds and in Bank of America Corporation's Columbia Strategic Cash Portfolio (the "Fund"). In December 2007, Columbia Management Group, LLC, the Fund's manager, determined that the assets of the Fund had declined in fair value and the Fund would no longer seek to maintain a net asset value ("NAV") of one dollar per share. As a result, the Fund's NAV began to fluctuate based on changes in the market values of the assets owned by the Fund. The Fund ceased accepting orders for new shares and began an orderly liquidation of Fund assets for distribution to its shareholders. At December 31, 2008 and 2007, the Fund's NAV was $0.8266 per share and 0.9874 per share, respectively. For the year ended December 31, 2008, we recognized a loss on our investment in the Fund of approximately $597,000. For the year ended December 31, 2007, we recognized a loss on our investment in the Fund of approximately $137,000. If the current credit environment continues to deteriorate, our investments in money market funds could become impaired and our investment in the Columbia Strategic Cash Portfolio could suffer additional losses, which would adversely impact our financial results.

We operate primarily in the United States. However, some of our clinical trial sites are located in Canada and the United Kingdom which requires us to make payments for certain clinical trial services in foreign currencies. In accordance with the terms of our collaboration and license agreement with Ipsen, Ipsen is required to pay us €500,000 as additional license fees next year. We are also entitled to receive from Ipsen up to €39.0 million in milestone payments subject to the successful development and launch of toremifene in certain countries of the European Territory. Ipsen's obligation to make payments to us in Euros exposes us to potential foreign currency transaction losses. Our exposure to foreign currency rate fluctuations will increase if and to the extent we are able to commercialize toremifene 80 mg and toremifene 20 mg because we are obligated to pay Orion Corporation, our supplier of toremifene, in Euros. However, we do not expect that our total exposure to changes in foreign currencies

will be material to our operating results in 2009. We do not currently use derivative financial instruments to mitigate this exposure.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Our financial statements and the reports of our independent registered public accounting firm are included in this Annual Report on Form 10-K beginning on page F-1. The index to these reports and our financial statements is included in Part IV, Item 15 below.

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

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

We maintain disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended (the "Exchange Act")) that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate, to allow for timely decisions regarding required disclosures.

We have 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 the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Based on the evaluation of these disclosure controls and procedures, our chief executive officer and chief financial officer have concluded that our disclosure controls and procedures were effective.

Management's Report on Internal Control over Financial Reporting

We, as management of GTx, Inc., are responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Securities Exchange Act Rule 13a-15(f). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with United States generally accepted accounting principles. Any system of internal control, no matter how well designed, has inherent limitations, including the possibility that a control can be circumvented or overridden and misstatements due to error or fraud may occur and not be detected. Also, because of changes in conditions, internal control effectiveness may vary over time. Accordingly, even an effective system of internal control will provide only reasonable assurance that the objectives of the internal control system are met.

Under the supervision and with the participation of management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2008 using the criteria for effective internal control over financial reporting as described in "Internal Control – Integrated Framework," issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, we concluded that, as of December 31, 2008, our internal control over financial reporting was effective. The effectiveness of our internal control over financial reporting has been audited by Ernst & Young LLP, an independent registered public accounting firm.

Attestation Report of the Independent Registered Public Accounting Firm

Ernst & Young LLP, an independent registered public accounting firm, has issued an audit report on the effectiveness of our internal control over financial reporting, which report is included elsewhere herein.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the fourth quarter of 2008 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

On November 5, 2008, we exercised our option to extend, for a term of one year, the term of that certain sublease agreement, dated April 1, 2005 (the "Lease"), with the University of Tennessee Research Foundation (successor-in-interest to TriStar Enterprises, Inc.) ("Landlord") for the lease of approximately 53,000 square feet of laboratory and office space located at 3 North Dunlap Street, Memphis, TN (the "Premises"). Under the terms of the Lease, the term of the Lease was extended for a period of 12 months expiring on December 31, 2009, unless sooner terminated in accordance with the terms of the Lease. Further, we have the option to extend the sublease for an additional year. The monthly base rent for the Premises during the extended term under the Lease is $36,000 per month.

Under the terms of the Lease, we continue to be responsible for our proportionate share of all operating expenses, including utilities, taxes, and repairs and maintenance. We are also responsible for maintaining certain insurance policies during the remaining term. In the event of a default of certain of our obligations under the Lease, the Landlord would have right to terminate the Lease. The foregoing is only a brief description of the material terms of the Lease and does not purport to be a complete statement of the rights and obligations of the parties under the Lease, and is qualified in its entirety by reference to the Lease that is filed as Exhibit 10.27 to our Quarterly Report on Form 10-Q filed with the SEC on July 27, 2005.

PART III

Certain information required by Part III is omitted from this Annual Report on Form 10-K because we will file our definitive proxy statement for our 2009 Annual Meeting of Stockholders with the U.S. Securities and Exchange Commission pursuant to Regulation 14A (the "2009 Proxy Statement") not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, and certain information included in the 2009 Proxy Statement is incorporated herein by reference.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

(1) The information required by this Item concerning our directors and nominees for director, including information with respect to our audit committee and audit committee financial experts, may be found under the section entitled "Proposal No. 1 – Election of Directors" and "Additional Information About the Board of Directors" appearing in the 2009 Proxy Statement. Such information is incorporated herein by reference.

(2) The information required by this Item concerning compliance with Section 16(a) of the Securities Exchange Act of 1934 may be found in the section entitled "Section 16(a) Beneficial Ownership Reporting Compliance" appearing in the 2009 Proxy Statement. Such information is incorporated herein by reference.

(3) The information required by this Item concerning our executive officers is set forth in the section entitled "Executive Officers of Registrant" in Part I, Item 1 of this Form 10-K and is incorporated herein by reference.

(4) Our Board has adopted a Code of Business Conduct and Ethics applicable to all officers, directors and employees as well as Guidelines on Governance Issues. These documents are available on our website (www.gtxinc.com) under "About GTx" at "Governance." We will provide a copy of these documents to any person, without charge, upon request, by writing to us at GTx, Inc., Director, Corporate Communications and Financial

Analysis, 175 Toyota Plaza, Suite 700, Memphis, Tennessee 38103. We intend to satisfy the disclosure requirement under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of the Code of Business Conduct and Ethics by posting such information on our website at the address and the locations specified above.

ITEM 11. EXECUTIVE COMPENSATION

(1) The information required by this Item concerning director and executive compensation is incorporated herein by reference to the information from the 2009 Proxy Statement under the sections entitled "Compensation Discussion and Analysis," "Executive Compensation" and "Director Compensation."

(2) The information required by this Item concerning Compensation Committee interlocks and insider participation is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Compensation Committee Interlocks and Insider Participation."

(3) The information required by this Item concerning our Compensation Committee's review and discussion of our Compensation Discussion and Analysis is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Compensation Committee Report."

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

(1) The information required by this Item with respect to security ownership of certain beneficial owners and management is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Security Ownership of Certain Beneficial Owners and Management."

(2) The information required by this Item with respect to securities authorized for issuance under our equity compensation plans is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Equity Compensation Plan Information."

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

(1) The information required by this Item concerning related party transactions is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Certain Relationships and Related Party Transactions."

(2) The information required by this Item concerning director independence is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Additional Information About the Board of Directors – Director Independence."

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item is incorporated herein by reference to the information from the 2009 Proxy Statement under the section entitled "Proposal No. 2 – Ratification of Appointment of Independent Registered Public Accounting Firm."

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)(1) Index to Financial Statements

Page	Description
F-2	Management's Report on Internal Control Over Financial Reporting
F-3	Reports of Independent Registered Public Accounting Firm
F-5	Balance Sheets at December 31, 2008 and 2007
F-6	Statements of Operations for the Years Ended December 31, 2008, 2007 and 2006
F-7	Statements of Stockholders' Equity for the Years Ended December 31, 2008, 2007 and 2006
F-8	Statements of Cash Flows for the Years Ended December 31, 2008, 2007 and 2006
F-9	Notes to Financial Statements

(a)(2) Financial statement schedules are omitted as they are not applicable.

(a)(3) See 15(b) below.

(b) Exhibits

Number	Description
3.1	Restated Certificate of Incorporation of GTx, Inc. [1]
3.2	Amended and Restated Bylaws of GTx, Inc.[2]
4.1	Reference is made to Exhibits 3.1 and 3.2
4.2	Specimen of Common Stock Certificate[3]
4.3	Amended and Restated Registration Rights Agreement between Registrant and Oracle Partners, L.P. dated August 7, 2003[3]
4.4*	Amended and Restated Registration Rights Agreement between Registrant and J. R. Hyde, III dated August 7, 2003[3]
4.5	Consent, Waiver and Amendment between the Registrant and Oracle Partners, L.P., Oracle Investment Management, Inc. and Oracle Institutional Partners, L.P. dated November 29, 2007[4]
4.6*	Consent, Waiver and Amendment between Registrant and J. R. Hyde, III and Pittco Associates, L.P. dated December 3, 2007[4]
4.7	Registration Rights Agreement between Registrant and Merck & Co., Inc. dated December 18, 2007[5]
10.1*+	Genotherapeutics, Inc. 1999 Stock Option Plan, as amended through November 4, 2008, and Form of Stock Option Agreement
10.2*+	GTx, Inc. 2000 Stock Option Plan, as amended through November 4, 2008, and Form of Stock Option Agreement
10.3*+	GTx, Inc. 2001 Stock Option Plan, as amended through November 4, 2008, and Form of Stock Option Agreement
10.4*+	GTx, Inc. 2002 Stock Option Plan, as amended through November 4, 2008, and Form of Stock Option Agreement
10.5*	GTx, Inc. 2004 Equity Incentive Plan and Form of Stock Option Agreement[3]
10.6*	GTx, Inc. 2004 Equity Incentive Plan, as amended effective April 30, 2008[6]
10.7*	GTx, Inc. Directors' Deferred Compensation Plan[7]
10.8*+	Amended and Restated Employment Agreement dated November 10, 2008, between Registrant and Mitchell S. Steiner, M.D.
10.9*+	Amended and Restated Employment Agreement dated November 10, 2008, between Registrant and Marc S. Hanover
10.10*+	Amended and Restated Employment Agreement dated November 10, 2008, between Registrant and Mark E. Mosteller
10.11*+	Amended and Restated Employment Agreement dated November 10, 2008, between Registrant and Henry P. Doggrell
10.12*	Form of Indemnification Agreement[3]
10.13	Lease Agreement, dated March 7, 2001, between The University of Tennessee and TriStar Enterprises, Inc.[3]

Number	Description
10.14	Sublease Agreement dated October 1, 2000, as amended, between Registrant and TriStar Enterprises, Inc.[3]
10.15†	Amended and Restated License and Supply Agreement dated October 22, 2001, between Registrant and Orion Corporation[8]
10.16†	Amendment No. 1 to the License and Supply Agreement dated March 5, 2003, between Registrant and Orion Corporation[3]
10.20	Reserved
10.21	Reserved
10.22	Reserved
10.23†	Amendment No. 2 to the License and Supply Agreement dated December 29, 2003, between Registrant and Orion Corporation[3]
10.24†	Purchase Agreement dated December 13, 2004, between Registrant and Orion Corporation[9]
10.25†	Amended and Restated License and Supply Agreement effective January 1, 2005, between Registrant and Orion Corporation[10]
10.26	Sublease Agreement dated April 1, 2005, as amended, between Registrant and TriStar Enterprises, Inc.[11]
10.27*+	Amended and Restated Employment Agreement dated November 10, 2008 between Registrant and James T. Dalton
10.28*	2008 Compensation Information for Registrant's Executive Officers[12]
10.29*+	2009 Compensation Information for Registrant's Executive Officers
10.30*	GTx, Inc. 2004 Non-Employee Directors' Stock Option Plan and Form of Stock Option Agreement[13]
10.31*	Amended and Restated GTx, Inc. 2004 Non-Employee Directors' Stock Option Plan, effective April 26, 2006[14]
10.32†	Amendment dated May 23, 2006 to the Amended and Restated License and Supply Agreement effective January 1, 2005, between Registrant and Orion Corporation[15]
10.33†	Amendment dated June 30, 2006 to the Amended and Restated License and Supply Agreement effective January 1, 2005, between Registrant and Orion Corporation[16]
10.34*	Form of Stock Option Agreement under the Amended and Restated GTx, Inc. 2004 Non-Employee Directors' Stock Option Plan[17]
10.35†	Partial Assignment Agreement among Registrant, Orion Corporation and Ipsen Limited dated September 7, 2006[18]
10.36†	Collaboration and License Agreement between Registrant and Ipsen Limited dated September 7, 2006[19]
10.37*	GTx, Inc. Executive Bonus Compensation Plan[20]
10.38*+	Amended and Restated Employment Agreement dated November 10, 2008, between Registrant and Ronald A. Morton, Jr., M.D.
10.39	Reserved
10.40†	Consolidated, Amended, and Restated License Agreement dated July 24, 2007, between Registrant and University of Tennessee Research Foundation[7]
10.41†	Amended and Restated License Agreement dated September 24, 2007, between Registrant and University of Tennessee Research Foundation[7]
10.42	Stock Purchase Agreement, dated November 5, 2007, between the Registrant and Merck & Co., Inc.[21]
10.43†	Exclusive License and Collaboration Agreement between the Registrant and Merck & Co., Inc. dated November 5, 2007[22]
10.44*+	Amended and Restated Employment Agreement, dated November 10, 2008, between Registrant and Gregory A. Deener
10.45*	2008 Non-Employee Director Compensation Arrangements[22]
10.46	Sublease Agreement, dated December 17, 2007 by and between the Registrant and ESS SUSA Holdings, LLC[22]
10.47+	Amendment, dated December 29, 2008, to the Consolidated, Amended and Restated License Agreement dated July 24, 2007 between the Registrant and University of Tennessee Research Foundation
10.48+	Amendment, dated December 29, 2008, to the Amended and Restated License Agreement dated September 24, 2007 between the Registrant and University of Tennessee Research Foundation
10.49*+	Directors' Deferred Compensation Plan, as amended effective November 4, 2008
10.50*+	Non-Employee Director Compensation Policy of GTx, Inc., effective January 1, 2009
10.51*+	Amended and Restated GTx, Inc. 2004 Non-Employee Directors' Stock Option Plan, as amended effective November 4, 2008

Number	Description
10.52*+	GTx, Inc. 2004 Equity Incentive Plan, as amended effective November 4, 2008 and Form of Stock Option Agreement
10.53*+	Amended and Restated GTx, Inc. Executive Bonus Compensation Plan, effective November 4, 2008
10.54+	Amendment, dated July 21, 2008, to the Sublease Agreement dated December 17, 2007 by and between the Registrant and ESS SUSA Holdings, LLC
12.1+	Statement of Computation of Deficiency of Earnings Available to Cover Fixed Charges
23.1+	Consent of Independent Registered Public Accounting Firm
24.1+	Power of Attorney (included on the signature pages hereto)
31.1+	Certification of Chief Executive Officer, as required by Rule 13a-14(a) or Rule 15d-14(a)
31.2+	Certification of Chief Financial Officer, as required by Rule 13a-14(a) or Rule 15d-14(a)
32.1+	Certification of Chief Executive Officer, as required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350)(23)
32.2+	Certification of Chief Financial Officer, as required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350)(23)

† Confidential treatment has been granted with respect to certain portions of this exhibit. This exhibit omits the information subject to this confidentiality request. Omitted portions have been filed separately with the SEC.

* Indicates a management contract or compensation plan or arrangement.

+ Filed herewith

(1) Filed as Exhibit 4.1 to the Registrant's registration statement on Form S-3 (File No. 333-127175), filed with the SEC on August 4, 2005, and incorporated herein by reference.

(2) Filed as the like numbered Exhibit to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the SEC on July 26, 2007 and incorporated herein by reference.

(3) Filed as the like numbered Exhibit to the Registrant's registration statement on Form S-1 (File No. 333-109700), filed with the SEC on October 15, 2003, as amended, and incorporated herein by reference.

(4) Filed as the like numbered Exhibit to the Registrant's registration statement on Form S-3 (File No. 333-148321), filed with the SEC on December 26, 2007, and incorporated herein by reference.

(5) Filed as the like numbered Exhibit to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the Securities and Exchange Commission on December 18, 2007, and incorporated herein by reference.

(6) Filed as the like numbered Exhibit to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the SEC on May 6, 2008, and incorporated herein by reference.

(7) Filed as the like numbered Exhibit to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on November 9, 2007, and incorporated herein by reference.

(8) Filed as the like numbered Exhibit to the Registrant's Annual Report on Form 10-K (File No. 000-50549), filed with the SEC on March 9, 2007, and incorporated herein by reference.

(9) Filed as Exhibit 10.1 to the Registrant's Current Report on Form 8-K/A (File No. 000-50549), filed with the SEC on March 7, 2005, and incorporated herein by reference.

(10) Filed as Exhibit 10.2 to the Registrant's Current Report on Form 8-K/A (File No. 000-50549), filed with the SEC on March 7, 2005, and incorporated herein by reference.

(11) Filed as Exhibit 10.27 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on July 27, 2005, and incorporated herein by reference.

(12) Filed as Exhibit 10.44 to the Registrant's Annual Report on Form 10-K (File No. 000-50549), filed with the SEC on March 11, 2008, and incorporated herein by reference.

(13) Filed as Exhibit 10.6 to the Registrant's registration statement on Form S-1 (File No. 333-109700), filed with the SEC on October 15, 2003, as amended, and incorporated herein by reference.

(14) Filed as Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the SEC on April 27, 2006, and incorporated herein by reference.

(15) Filed as Exhibit 10.33 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on August 9, 2006, and incorporated herein by reference.

(16) Filed as Exhibit 10.34 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on August 9, 2006, and incorporated herein by reference.

(17) Filed as Exhibit 10.35 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on August 9, 2006, and incorporated herein by reference.

(18) Filed as Exhibit 10.36 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on November 3, 2006, and incorporated herein by reference.

(19) Filed as Exhibit 10.37 to the Registrant's Quarterly Report on Form 10-Q (File No. 000-50549), filed with the SEC on November 3, 2006, and incorporated herein by reference.

(20) Filed as Exhibit 10.2 to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the SEC on November 3, 2006, and incorporated herein by reference.

(21) Filed as the like numbered Exhibit to the Registrant's Current Report on Form 8-K (File No. 000-50549), filed with the SEC on November 6, 2007, and incorporated herein by reference.

(22) Filed as the like numbered Exhibit to the Registrant's Annual Report on Form 10-K (File No. 000-50549), filed with the SEC on March 11, 2008, and incorporated herein by reference.

(23) This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Registrant under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

GTx, Inc.

By /s/ Mitchell S. Steiner
Mitchell S. Steiner, M.D., F.A.C.S.
Chief Executive Officer, Vice Chairman and Director Date: February 27, 2009

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENT, that each person whose signature appears below constitutes and appoints Mitchell S. Steiner and Mark E. Mosteller, and each of them, acting individually, as his attorney-in-fact, each with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

		Date
/s/ J. R. Hyde, III J. R. Hyde, III	Chairman of the Board of Directors	February 27, 2009
/s/ Mitchell S. Steiner Mitchell S. Steiner, M.D., F.A.C.S.	Chief Executive Officer, Vice Chairman and Director (Principal Executive Officer)	February 27, 2009
/s/ Mark E. Mosteller Mark E. Mosteller, CPA	Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 27, 2009
/s/ Marc S. Hanover Marc S. Hanover	Director	February 27, 2009
/s/ Michael G. Carter Michael G. Carter, M. D.	Director	February 27, 2009
/s/ J. Kenneth Glass J. Kenneth Glass	Director	February 27, 2009
/s/ Robert W. Karr Robert W. Karr, M.D.	Director	February 27, 2009
/s/ Rosemary Mazanet Rosemary Mazanet, M.D., Ph.D.	Director	February 27, 2009

/s/ John H. Pontius John H. Pontius	Director	February 27, 2009
/s/ Kenneth S. Robinson Rev. Kenneth S. Robinson, M.D.	Director	February 27, 2009
/s/ Timothy R. G. Sear Timothy R. G. Sear	Director	February 27, 2009

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GTx, Inc.

INDEX TO FINANCIAL STATEMENTS

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

We, as management of GTx, Inc., are responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Securities Exchange Act Rule 13a-15(f). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with United States generally accepted accounting principles. Any system of internal control, no matter how well designed, has inherent limitations, including the possibility that a control can be circumvented or overridden and misstatements due to error or fraud may occur and not be detected. Also, because of changes in conditions, internal control effectiveness may vary over time. Accordingly, even an effective system of internal control will provide only reasonable assurance that the objectives of the internal control system are met.

Under the supervision and with the participation of management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2008 using the criteria for effective internal control over financial reporting as described in "Internal Control – Integrated Framework," issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, we concluded that, as of December 31, 2008, our internal control over financial reporting was effective. The effectiveness of our internal control over financial reporting has been audited by Ernst & Young LLP, an independent registered public accounting firm.

/s/ Mitchell S. Steiner
Mitchell S. Steiner, M.D., F.A.C.S.
Vice Chairman and
Chief Executive Officer

/s/ Mark E. Mosteller
Mark E. Mosteller, CPA
Vice President, Chief Financial Officer
and Treasurer

Memphis, Tennessee
February 27, 2009

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of GTx, Inc.

We have audited GTx, Inc.'s internal control over financial reporting as of December 31, 2008, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the COSO criteria). GTx Inc.'s management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit 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 effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, GTx, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2008, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the accompanying balance sheets of GTx, Inc. as of December 31, 2008 and 2007, and the related statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2008 and our report dated February 27, 2009 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Memphis, Tennessee
February 27, 2009

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of GTx, Inc.

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

We conducted our audits in accordance with 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. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes 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 GTx, Inc. at December 31, 2008 and 2007, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2008, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the effectiveness of GTx, Inc.'s internal control over financial reporting as of December 31, 2008, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 27, 2009 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Memphis, Tennessee
February 27, 2009

GTx, Inc.
BALANCE SHEETS
(in thousands, except share data)

	December 31, 2008	December 31, 2007
ASSETS		
Current assets:		
Cash and cash equivalents	$ 95,510	$ 100,178
Short-term investments	2,157	9,810
Accounts receivable, net	487	117
Inventory	92	78
Receivable from collaboration partners	777	40,719
Prepaid expenses and other current assets	1,001	1,362
Total current assets	100,024	152,264
Property and equipment, net	3,988	2,308
Intangible assets, net	4,093	4,430
Other assets	4	728
Total assets	$ 108,109	$ 159,730
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 2,821	$ 1,614
Accrued expenses	6,666	6,784
Deferred revenue – current portion	11,490	10,934
Total current liabilities	20,977	19,332
Deferred revenue, less current portion	54,732	61,245
Other long-term liabilities	382	236
Commitments and contingencies		
Stockholders' equity:		
Common stock, $0.001 par value: 60,000,000 shares authorized; 36,392,443 shares issued and outstanding at December 31, 2008 and 36,216,263 shares issued and outstanding at December 31, 2007	36	36
Additional paid-in capital	353,900	349,019
Accumulated deficit	(321,918)	(270,138)
Total stockholders' equity	32,018	78,917
Total liabilities and stockholders' equity	$ 108,109	$ 159,730

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

GTx, Inc.
STATEMENTS OF OPERATIONS
(in thousands, except share and per share data)

	Years Ended December 31,		
	2008	**2007**	**2006**
Revenues:			
Product sales, net	$ 1,088	$ 1,076	$ 1,357
Collaboration revenue	12,440	6,050	6,148
Total revenues	13,528	7,126	7,505
Costs and expenses:			
Cost of product sales	649	621	773
Research and development expenses	44,259	38,508	33,897
General and administrative expenses	23,105	13,501	11,352
Total costs and expenses	68,013	52,630	46,022
Loss from operations	(54,485)	(45,504)	(38,517)
Interest income	2,705	5,145	3,007
Net loss	$ (51,780)	$ (40,359)	$ (35,510)
Net loss per share:			
Basic and diluted	$ (1.43)	$ (1.16)	$ (1.14)
Weighted average shares used in computing net loss per share:			
Basic and diluted	36,301,558	34,940,151	31,150,035

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

GTx, Inc.
STATEMENTS OF STOCKHOLDERS' EQUITY
For the Years Ended December 31, 2008, 2007 and 2006
(in thousands, except share and per share data)

	Stockholders' Equity					
	Common Stock		Deferred Stock Compensation	Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balances at January 1, 2006	30,993,967	$ 31	$ (1,725)	$ 269,542	$ (194,269)	$ 73,579
Issuance of common stock	3,799,600	4	–	57,422	–	57,426
Exercise of employee stock options	28,795	–	–	153	–	153
Directors' deferred compensation	–	–	–	140	–	140
Share-based compensation	–	–	–	1,261	–	1,261
Reversal of deferred stock compensation	–	–	1,725	(1,725)	–	–
Net loss and comprehensive loss	–	–	–	–	(35,510)	(35,510)
Balances at December 31, 2006	34,822,362	35	–	326,793	(229,779)	97,049
Issuance of common stock	1,285,347	1	–	19,176	–	19,177
Exercise of employee stock options	108,554	–	–	826	–	826
Directors' deferred compensation	–	–	–	183	–	183
Share-based compensation	–	–	–	2,041	–	2,041
Net loss and comprehensive loss	–	–	–	–	(40,359)	(40,359)
Balances at December 31, 2007	36,216,263	36	–	349,019	(270,138)	78,917
Exercise of employee stock options	176,180	–	–	1,167	–	1,167
Directors' deferred compensation	–	–	–	178	–	178
Share-based compensation	–	–	–	3,536	–	3,536
Net loss and comprehensive loss	–	–	–	–	(51,780)	(51,780)
Balances at December 31, 2008	36,392,443	$ 36	$ –	$ 353,900	$ (321,918)	$ 32,018

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

GTx, Inc.
STATEMENTS OF CASH FLOWS
(in thousands)

	Years Ended December 31,		
	2008	**2007**	**2006**
Cash flows from operating activities:			
Net loss	$ (51,780)	$ (40,359)	$ (35,510)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	1,562	1,150	1,140
Share-based compensation	3,536	2,041	1,261
Directors' deferred compensation	178	183	140
Deferred revenue amortization	(10,957)	(6,050)	(6,148)
Foreign currency transaction loss (gain)	34	(140)	237
Loss on retirement of property and equipment	–	9	–
Changes in assets and liabilities:			
Short-term investments	7,653	(9,810)	–
Accounts receivable, net	(370)	(56)	92
Inventory	(14)	129	(72)
Receivable from collaboration partners	40,610	(39,372)	(2,146)
Prepaid expenses and other assets	383	(21)	419
Accounts payable	1,207	278	(71)
Accrued expenses and other long-term liabilities	33	3,561	(61)
Deferred revenue	5,000	50,823	29,259
Net cash used in operating activities	(2,925)	(37,634)	(11,460)
Cash flows from investing activities:			
Purchase of property and equipment	(2,905)	(1,223)	(578)
Purchase of intangible assets	–	(513)	–
Net cash used in investing activities	(2,905)	(1,736)	(578)
Cash flows from financing activities:			
Proceeds from issuance of common stock	–	19,177	57,426
Proceeds from exercise of employee stock options	1,167	826	153
Payments on capital lease obligation	(5)	(5)	(5)
Net cash provided by financing activities	1,162	19,998	57,574
Net (decrease) increase in cash and cash equivalents	(4,668)	(19,372)	45,536
Cash and cash equivalents, beginning of year	100,178	119,550	74,014
Cash and cash equivalents, end of year	$ 95,510	$ 100,178	$ 119,550

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

1. Business and Basis of Presentation

Business

GTx, Inc. ("GTx" or the "Company"), a Delaware corporation incorporated on September 24, 1997 and headquartered in Memphis, Tennessee, is a biopharmaceutical company dedicated to the discovery, development and commercialization of small molecules that selectively target hormone pathways to treat cancer, osteoporosis and bone loss, muscle loss and other serious medical conditions. GTx operates in one business segment.

GTx is developing toremifene citrate, a selective estrogen receptor modulator ("SERM") in two separate clinical programs in men: first, toremifene 80 mg in a completed pivotal Phase III clinical trial for the prevention of bone fractures and treatment of other estrogen deficiency side effects of androgen deprivation therapy ("ADT") in men with prostate cancer and second, toremifene 20 mg in an ongoing pivotal Phase III clinical trial for the prevention of prostate cancer in high risk men with precancerous prostate lesions called high grade prostatic intraepithelial neoplasia ("high grade PIN"). In December 2008, the Company submitted a New Drug Application, or NDA, for toremifene 80 mg for the prevention of bone fractures in men with prostate cancer on ADT to the U.S. Food and Drug Administration, or FDA. GTx has licensed to Ipsen Developments Limited, formerly known as Ipsen Limited, ("Ipsen") exclusive rights in the European Union, Switzerland, Norway, Iceland, Lichtenstein, and the Commonwealth of Independent States (collectively, the "European Territory") to develop and commercialize toremifene for all indications which the Company has licensed from Orion Corporation ("Orion"). In December 2007, the Company and Merck & Co., Inc. ("Merck") entered into a collaboration to discover and develop selective androgen receptor modulators ("SARMs"), a new class of drugs with the potential to treat sarcopenia, which is the loss of skeletal muscle mass resulting in reduced physical strength and ability to perform activities of daily living, cancer cachexia (cancer induced muscle loss), and other musculoskeletal wasting or muscle loss conditions. The Company and Merck are evaluating multiple SARM product candidates, including Ostarine™ (designated by Merck as MK-2866) and MK-0773, for a variety of indications including sarcopenia and cancer cachexia. The Company currently markets FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in the United States.

2. Significant Accounting Policies

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 that affect the reported amounts of assets and liabilities, the 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 and results could differ from those estimates.

Cash and Cash Equivalents

The Company considers highly liquid investments with initial maturities of three months or less to be cash equivalents.

Short-term Investments

Short-term investments consist of an investment in Bank of America Corporation's Columbia Strategic Cash Portfolio (the "Fund"). In December 2007, Columbia Management Group, LLC, the Fund's manager, determined that the assets of the Fund had declined in fair value and the Fund would no longer seek to maintain a net asset value ("NAV") of $1.00 per share. The Fund ceased accepting new orders for new shares and began an orderly distribution of Fund assets to its shareholders. At December 31, 2008 and 2007, the Fund's NAV was $0.8266 and $0.9874 per share, respectively. The Company has classified this investment as trading, in accordance with Statement of Financial Accounting Standards ("SFAS") No. 115, *Accounting for Certain Investments in Debt and Equity Securities.* Accordingly, this investment is carried at fair value and all unrealized gains and losses are included in the statements of operations as general and administrative expense. For the years ended December 31,

(in thousands, except share and per share data)

2008 and 2007, the Company recognized losses on its investment in the Fund of approximately $597 and $137, respectively. The fair value of this investment was determined based on quoted market prices in active markets and other observable market data, or Level 1 and Level 2 inputs as defined by SFAS No. 157, *Fair Value Measurements*. Where quoted market prices in active markets were not available, inputs other than quoted prices that are observable, either directly or indirectly, were used to determine the fair value of this investment.

Accounts Receivable

Accounts receivable are recorded net of allowances for cash discounts for prompt payment. The Company makes judgments as to its ability to collect outstanding receivables and will provide allowances for the portion of receivables if and when collection becomes doubtful. The Company has not recorded reserves related to the collectability of its accounts receivable for the years ended December 31, 2008 and 2007.

Inventory

Inventory consists of FARESTON® tablets that are manufactured by Orion and delivered to the Company as finished goods. Inventory is stated at the lower of cost (first-in, first-out method) or market. The Company analyzes its current inventory levels and will write down inventory if it has become un-saleable or has a cost basis in excess of its expected net realizable value. To date, there have been no inventory write-downs.

Property and Equipment

Property and equipment is stated at cost. Amortization of leasehold improvements is recognized over the shorter of the estimated useful life of the leasehold improvement or the lease term. Depreciation is computed using the straight-line method over the estimated useful lives as follows:

Laboratory and office equipment	3 to 5 years
Leasehold improvements	3 to 6 years
Furniture and fixtures	5 years
Computer equipment and software	3 years

Intangible Assets

The Company accounts for its intangible assets in accordance with SFAS No.142, *Goodwill and Other Intangible Assets*, which requires that purchased intangible assets with finite lives be amortized over their estimated economic lives. The Company's intangible assets consist of license fees and represent the value of each license acquired by the Company pursuant to the agreements described in Note 6. The license fees are being amortized on a straight-line basis over the respective terms of the agreements.

Impairment of Long-Lived Assets

In accordance with SFAS No.144, *Accounting for the Impairment or Disposal of Long-Lived Assets and for Long-Lived Assets to be Disposed of*, the Company reviews long-lived assets for impairment whenever events or changes in facts and circumstances, both internally and externally, may indicate that an impairment of long-lived assets held for use are present. An impairment loss would be recognized when estimated future cash flows are less than the carrying amount. The cash flow estimates would be based on management's best estimates, using appropriate and customary assumptions and projections at the time.

Fair Value of Financial Instruments

The carrying amounts of the Company's financial instruments, which include cash, cash equivalents, short-term investments, accounts receivable and accounts payable approximate their fair values. The method of determining the fair value for the Company's short-term investments is discussed in *Short-term Investments* in this Note 2.

Concentration of Risk

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash and cash equivalents, short-term investments and accounts receivable. The Company has established guidelines relating to diversification and maturities of its cash equivalents and short-term investments which are designed to manage risk. The Company's cash equivalents consist of bank deposits and money market mutual funds. Bank deposits may at times be in excess of FDIC insurance limits. The Company's short-term investments consist of an investment in Bank of America Corporation's Columbia Strategic Cash Portfolio as discussed in *Short-term Investments* in this Note 2.

Three wholesale drug distributors individually comprised 58%, 27% and 15%, respectively, of the Company's accounts receivable as of December 31, 2008. These same three distributors represented 43%, 35% and 18%, respectively, of the Company's product sales for the year ended December 31, 2008.

Revenue Recognition

The Company recognizes net product sales revenue from the sale of FARESTON® less deductions for estimated sales discounts and sales returns. Revenue from product sales is recognized when the goods are shipped and title and risk of loss pass to the customer and the other criteria outlined in Staff Accounting Bulletin ("SAB") No. 101, *Revenue Recognition in Financial Statements*, as amended by SAB No. 104 (together, "SAB No. 104") and SFAS No. 48, *Revenue Recognition When Right of Return Exists,* are satisfied. The Company accounts for rebates to certain governmental agencies as a reduction of product sales. The Company allows customers to return product within a specified time period prior to and subsequent to the product's labeled expiration date. The Company estimates an accrual for product returns, which is recorded as a reduction of product sales, based on factors which include historical product returns and estimated product in the distribution channel which is expected to exceed its expiration date. At December 31, 2008 and 2007, the Company's accrual for product returns was $815 and $324, respectively.

Collaboration revenue consists of non-refundable upfront payments, license fees, reimbursements for research and development activities, and milestone payments associated with the Company's collaboration and license agreements discussed in Note 8. The Company recognizes this revenue in accordance with SAB No. 104, Emerging Issues Task Force ("EITF") Issue No. 00-21, *Revenue Arrangements with Multiple Deliverables* ("EITF 00-21") and EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal Versus Net as an Agent* ("EITF 99-19"). Accordingly, revenues from licensing agreements are recognized based on the performance requirements of the agreement. The Company has analyzed agreements with multiple element arrangements to determine whether the deliverables under the agreement, including license and performance obligations such as joint steering committee participation and research and development activities, can be separated or whether all of the deliverables must be accounted for as a single unit of accounting in accordance with EITF 00-21. For these arrangements, the Company was not able to identify evidence of fair value for the undelivered elements and therefore recognizes any consideration for a single unit of accounting in the same manner as revenue is recognized for the final deliverable, which is ratable over the performance period. The performance period was estimated at the inception of each agreement and is reevaluated at each reporting period. Revenues from milestone payments for which the Company has no continuing performance obligations are recognized upon achievement of the performance milestone, as defined in the related agreement, provided the milestone is substantive and a culmination of the earnings process has occurred. Performance obligations typically consist of significant milestones in the development life cycle of the related product candidates and technology, such as initiation of clinical trials, achievement of specified clinical trial endpoints, filing for approval with regulatory agencies and approvals by regulatory agencies.

Research and Development Costs

Research and development costs include, but are not limited to, expenses for personnel and facilities associated with research activities, screening and identification of product candidates, formulation and synthesis activities, manufacturing, preclinical studies, toxicology studies, clinical trials, regulatory affairs, quality assurance activities and license and royalty fees. The Company expenses these costs in the period in which they are incurred. The Company estimates its liabilities for research and development expenses in order to match the recognition of expenses to the period in which the actual services are received. As such, accrued liabilities related to third party research and development activities are recognized based upon the Company's estimate of services received and degree of completion of the services in accordance with the specific third party contract.

Patent Costs

The Company expenses patent costs, including legal expenses, in the period in which they are incurred. Patent expenses are included in general and administrative expenses in the Company's statements of operations.

Income Taxes

The Company accounts for deferred taxes by recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. A valuation allowance is provided when it is more likely than not that some portion or all of the deferred tax assets will not be realized. Accordingly, at December 31, 2008 and 2007, net of the valuation allowance, the net deferred tax assets were reduced to zero. See Note 9 for further discussion.

Stock Options

The Company has stock option and equity incentive plans that provide for the purchase or acquisition of the Company's common stock by certain of the Company's employees and directors. Effective January 1, 2006, the Company adopted SFAS No. 123(R), *Share-Based Payment* ("SFAS 123R") and began recognizing compensation expense for its share-based payments based on the fair value of the awards. See Note 3 for further discussion.

Basic and Diluted Net Loss Per Share

The Company computed net loss per share according to SFAS No. 128, *Earnings per Share,* which requires disclosure of basic and diluted earnings (loss) per share.

Basic net loss per share is calculated based on the weighted average number of common shares outstanding during the period. Diluted net loss per share gives effect to the dilutive potential of common stock consisting of stock options.

(in thousands, except share and per share data)

The following table sets forth the computation of the Company's basic and diluted net loss per share for the years ended December 31, 2008, 2007 and 2006:

	Years Ended December 31,		
	2008	2007	2006
Basic and diluted net loss per share			
Numerator:			
Net loss	$ (51,780)	$ (40,359)	$ (35,510)
Denominator:			
Common stock outstanding at beginning of period	36,216,263	34,822,362	30,993,967
Issuance of common stock on a weighted average basis	–	49,301	145,738
Exercise of employee stock options on a weighted average basis	85,295	68,488	10,330
Weighted average shares used in computing basic and diluted net loss per share	36,301,558	34,940,151[1]	31,150,035[2]
Basic and diluted net loss per share	$ (1.43)	$ (1.16)	$ (1.14)

(1) The weighted average shares used in computing basic and diluted net loss per share for the year ended December 31, 2007 included 49,301 shares, which represents the weighted average effect during the period of the Company's issuance of 1,285,347 shares of common stock to Merck on December 18, 2007.

(2) The weighted average shares used in computing basic and diluted net loss per share for the year ended December 31, 2006 included 145,738 shares, which represents the weighted average effect during the period of the Company's issuance of 3,799,600 shares of common stock in a public offering on December 18, 2006.

Weighted average options outstanding to purchase shares of common stock of 2,638,760, 1,835,743, and 1,462,842 were excluded from the calculation of diluted net loss per share for the years ended December 31, 2008, 2007 and 2006, respectively, as inclusion of the options would have an anti-dilutive effect on the net loss per share for the periods. At December 31, 2008, the Company had outstanding 36,392,443 shares of common stock.

Comprehensive Loss

The Company has adopted the provisions of SFAS No. 130, *Comprehensive Income* ("SFAS 130"). SFAS 130 establishes standards for the reporting and display of comprehensive income or loss and its components for general purpose financial statements. For all periods presented, there were no differences between net loss and comprehensive loss.

Recent Accounting Pronouncements

In November 2007, the Emerging Issues Task Force issued EITF Issue No. 07-01, *Accounting for Collaborative Arrangements* ("EITF 07-01"). EITF 07-01 concludes that the equity method of accounting cannot be applied to collaborative arrangement activities that are not conducted within a separate legal entity. Instead, the revenues and costs incurred with third parties in connection with the collaborative arrangement should be presented gross or net by the collaborators based on the criteria in EITF 99-19, and other applicable accounting literature. EITF 07-01 is effective for fiscal years beginning after December 15, 2008. The Company does not expect the adoption of EITF 07-01 will have a material impact on its financial position or results of operations.

3. Share-Based Compensation

Share-based payments include stock option grants under the Company's stock option and equity incentive plans and deferred compensation arrangements for the Company's directors. Effective January 1, 2006, the Company adopted SFAS 123R and began recognizing compensation expense for its share-based payments based on the fair value of the awards. On the date of adoption of SFAS 123R, the unamortized balance of deferred stock compensation of $1,725 was reduced to zero with an offsetting adjustment to additional paid-in capital.

(in thousands, except share and per share data)

The Company grants options to purchase common stock to certain employees and directors under various plans at prices equal to the fair market value of the stock on the dates the options are granted as determined in accordance with the terms of the applicable equity compensation plan. The options have a term of ten years from the grant date and vest three years from the grant date for director options and in periods up to five years from the grant date for employee options. Employees generally have three months after the employment relationship ends to exercise all vested options except in the case of retirement, disability or death, where exercise periods are generally longer. The Company issues new shares of common stock upon the exercise of options. The Company estimates the fair value of certain stock option awards as of the date of the grant by applying the Black-Scholes-Merton option pricing valuation model. The application of this valuation model involves assumptions that are judgmental and highly sensitive in the determination of compensation expense.

The fair value of each option is amortized into compensation expense on a straight-line basis between the grant date for the award and each vesting date. The amount of share-based compensation expense recognized is reduced ratably over the vesting period by an estimate of the percentage of options granted that are expected to be forfeited or canceled before becoming fully vested.

Total share-based compensation expense for the year ended December 31, 2008 was $3,714, of which $1,682 and $2,032 were recorded in the statement of operations as research and development expenses and general and administrative expenses, respectively. Total share-based compensation expense for the year ended December 31, 2007 was $2,224, of which $1,047 and $1,177 were recorded in the statement of operations as research and development expenses and general and administrative expenses, respectively. Total share-based compensation expense for the year ended December 31, 2006 was $1,401, of which $540 and $861 were recorded in the statement of operations as research and development expenses and general and administrative expenses, respectively. Share-based compensation expense for the years ended December 31, 2008, 2007 and 2006 included share-based compensation expense related to deferred compensation arrangements for the Company's directors of $178, $183 and $140, respectively. See Note 10 for further discussion of deferred compensation arrangements for the Company's directors.

For the years ended December 31, 2008, 2007 and 2006, the weighted average grant date fair value per share of options granted was $8.54, $10.41 and $5.67, respectively. The weighted average for key assumptions used in determining the fair value of options granted in 2008, 2007 and 2006 and a summary of the methodology applied to develop each assumption are as follows:

	Years Ended December 31,		
	2008	2007	2006
Expected price volatility	51.6%	50.6%	70.3%
Risk-free interest rate	3.5%	4.6%	4.6%
Weighted average expected life in years	6.9 years	6.9 years	6.0 years
Dividend yield	0%	0%	0%

Expected Price Volatility - This is a measure of the amount by which a price has fluctuated or is expected to fluctuate. Beginning in 2007, the Company based its determination of expected volatility on its historical stock price volatility. Prior to 2007, the Company used an average expected price volatility of other publicly traded biopharmaceutical companies because the Company believed that it was the best indicator of future volatility, since the Company had less than two years of its own historical stock price volatility. An increase in the expected price volatility will increase compensation expense.

Risk-Free Interest Rate - This is the U.S. Treasury rate for the week of the grant having a term approximating the expected life of the option. An increase in the risk-free interest rate will increase compensation expense.

Expected Life - This is the period of time over which the options granted are expected to remain outstanding and is determined by calculating the average of the vesting term and the contractual term of the options, as allowed by

(in thousands, except share and per share data)

SAB 110. The Company has utilized this method due to the lack of historical option exercise information related to the Company's stock option plans. Options granted have a maximum term of ten years. An increase in the expected life will increase compensation expense.

Dividend Yield - The Company has not made any dividend payments nor does it have plans to pay dividends in the foreseeable future. An increase in the dividend yield will decrease compensation expense.

The following is a summary of stock option transactions for all of the Company's stock option plans for the three year period ended December 31, 2008:

	Number of Shares	Weighted Average Exercise Price Per Share
Options outstanding at January 1, 2006	1,301,750	$ 8.27
Options granted	225,834	8.50
Options forfeited	(40,500)	9.42
Options exercised	(28,795)	5.32
Options outstanding at December 31, 2006	1,458,289	8.33
Options granted	566,417	18.23
Options forfeited	(36,500)	12.70
Options exercised	(108,554)	7.61
Options outstanding at December 31, 2007	1,879,652	11.27
Options granted	1,013,000	15.19
Options forfeited or expired	(42,496)	14.07
Options exercised	(176,180)	6.62
Options outstanding at December 31, 2008	2,673,976	13.01

The following table summarizes information about stock options outstanding at December 31, 2008:

Options Outstanding				Options Exercisable	
Exercise Price	Number Outstanding	Weighted Average Remaining Contractual Life (years)	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
$2.24 - $10.86	920,727	5.24	$ 7.62	635,889	$ 7.14
$10.87 - $14.84	921,332	8.28	13.95	139,841	12.94
$14.85 - $20.45	831,917	8.59	17.95	15,891	19.97
	2,673,976	7.33	13.01	791,621	8.42

At December 31, 2008, the aggregate intrinsic value of all outstanding options was $11,209 with a weighted average remaining contractual term of 7.33 years, of which 791,621 of the outstanding options are currently exercisable with an aggregate intrinsic value of $6,716, a weighted average exercise price of $8.42 and a weighted average remaining contractual term of 4.79 years. There were 176,180 options exercised during the year ended December 31, 2008. The total intrinsic value of options exercised during the years ended December 31, 2008, 2007, and 2006 was $1,626, $1,191, and $204, respectively. At December 31, 2008, the total compensation cost related to non-vested awards not yet recognized was $8,804 with a weighted average expense recognition period of 2.42 years. Options available for future issuance under the Company's stock option plans were 1,859,699 at December 31, 2008. On January 1, 2009, options available for future issuance increased to 3,737,321 in accordance with the provisions of the Company's stock option plans.

(in thousands, except share and per share data)

4. Property and Equipment, Net

Property and equipment consist of the following:

	December 31,	
	2008	2007
Laboratory and office equipment	$ 4,174	$ 3,080
Computer equipment and software	2,465	1,581
Furniture and fixtures	1,355	328
Leasehold improvements	1,024	669
In process equipment and software	36	491
	9,054	6,149
Less: accumulated depreciation	(5,066)	(3,841)
	$ 3,988	$ 2,308

Depreciation and amortization expense for the years ended December 31, 2008, 2007 and 2006 was $1,225, $841 and $842, respectively. Of these amounts, $528, $388 and $403, respectively, were included in research and development expenses in the statements of operations.

5. Accrued Expenses

Accrued expenses consist of the following:

	December 31,	
	2008	2007
Employee compensation	$ 2,131	$ 474
Research and development	1,687	3,314
Sales and marketing	1,355	461
Clinical trials	884	1,502
Other	609	1,033
	$ 6,666	$ 6,784

6. Intangible Assets

Intangible assets consist of the following:

	December 31,	
	2008	2007
License fees	$ 5,339	$ 5,339
Less: accumulated amortization	(1,246)	(909)
	$ 4,093	$ 4,430

In accordance with the terms of the Amended and Restated License and Supply Agreement that the Company entered into with Orion in December 2004 ("Orion License and Supply Agreement"), the Company was required to pay a license fee of $4,826. This license fee is being amortized on a straight-line basis over the term of the Orion License and Supply Agreement which the Company estimates to be 16 years. In accordance with the terms of the Consolidated, Amended, and Restated License Agreement ("SARM License Agreement") and the Amended and Restated License Agreement ("SERM License Agreement") that the Company entered into with the University of Tennessee Research Foundation ("UTRF") in July 2007 and September 2007, respectively, the Company paid a one-time up-front fee of $290 per license. The license fees under the SARM License Agreement and the SERM License Agreement are being amortized on a straight-line basis over the respective terms of the agreements, which the Company estimates to be approximately 14 years and 11.5 years, respectively. Amortization expense for the years

(in thousands, except share and per share data)

ended December 31, 2008, 2007 and 2006 was $337, $309 and $298, respectively. See Note 8 for additional information on intangible assets.

Estimated future amortization expense for purchased intangible assets at December 31, 2008 is as follows:

Years Ending December 31,	
2009	$ 337
2010	337
2011	337
2012	337
2013	337
Thereafter	2,408
Total	$ 4,093

7. Common and Preferred Stock

The Company's certificate of incorporation authorizes the Company to issue 60,000,000 shares of common stock with $0.001 par value per share and 5,000,000 shares of preferred stock, par value $0.001.

On December 18, 2006, the Company completed a public offering of 3,799,600 shares of common stock at a price to the public of $16.00 per share. Net cash proceeds from this offering were $57,426 after deducting placement agent fees and other offering expenses.

On December 18, 2007, the Company completed a private placement of 1,285,347 shares of common stock to Merck at a per share price of $23.34 (see Note 8).

8. Collaboration and License Agreements

Merck & Co., Inc. Collaboration and License Agreement

In December 2007, GTx and Merck entered into a global exclusive license and collaboration agreement (the "Merck Collaboration Agreement") governing the Company's and Merck's joint research, development and commercialization of SARM compounds and related SARM products, including SARMs currently being developed by the Company and Merck and those yet to be discovered, for all potential indications of interest.

Under the Merck Collaboration Agreement, the Company granted Merck an exclusive worldwide license under its SARM-related patents and know-how. The Company is conducting preclinical research of SARM compounds and products, and Merck is primarily responsible for conducting and funding development and commercialization of products developed under the Merck Collaboration Agreement. Merck paid the Company an upfront licensing fee of $40,000, which was received in January 2008. In addition, Merck has agreed to pay the Company $15,000 in guaranteed cost reimbursements for research and development activities in equal annual installments over a three year period beginning on the first anniversary of the effective date of the Merck Collaboration Agreement. In December 2008, the Company received $5,000 from Merck as the initial payment of the cost reimbursement for research and development activities. The Company is also eligible to receive under the Merck Collaboration Agreement up to $422,000 in future milestone payments associated with the development and regulatory approval of a lead product candidate, including Ostarine™, as defined in the Merck Collaboration Agreement, if multiple indications are developed and receive required regulatory approvals, as well as additional milestone payments for the development and regulatory approval of other product candidates developed under the Merck Collaboration Agreement. Merck has also agreed to pay the Company tiered royalties on net sales of products that may be developed under the Merck Collaboration Agreement. The Company is responsible for any payments owed to the University of Tennessee Research Foundation ("UTRF") resulting from the Merck Collaboration Agreement.

Unless terminated earlier, the Merck Collaboration Agreement will remain in effect in each country of sale at least until the expiration of all valid claims of the licensed patents in such country. However, Merck may terminate the Merck Collaboration Agreement at its election at any time after a specified period of time following the

effectiveness of the Merck Collaboration Agreement, and either party may terminate the Merck Collaboration Agreement at any time for the other party's uncured material breach or bankruptcy. Under certain conditions, Merck will continue to owe royalties on certain products after it terminates the Merck Collaboration Agreement without cause.

The Company and Merck also entered into a Stock Purchase Agreement pursuant to which the Company sold to Merck on December 18, 2007, 1,285,347 newly-issued shares of the Company's common stock for an aggregate purchase price of approximately $30,000, or $23.34 per share.

The Company deferred the recognition of the upfront licensing fee of $40,000 and the $10,800 in equity premium received that represents the difference between the purchase price and the closing price of the Company's common stock on the date the stock was purchased by Merck. These payments are being recognized as revenue over the period of the Company's performance obligation, which the Company estimates to be ten years. The $5,000 of cost reimbursement received in December 2008 is being recognized as collaboration revenue over the remaining period of the Company's performance obligation. The Company recognized as collaboration revenue $5,106 and $198 for the years ended December 31, 2008 and 2007, respectively, from the amortization of the Merck deferred revenue. The remaining cost reimbursements for research and development activities will begin to be recognized as collaboration revenue when the amounts are determinable and collection of the related receivable is reasonably assured.

Ipsen Collaboration and License Agreement

In September 2006, the Company entered into a collaboration and license agreement with Ipsen (the "Ipsen Collaboration Agreement") pursuant to which the Company granted Ipsen exclusive rights in the European Territory to develop and commercialize toremifene in all indications which the Company has licensed from Orion, which include all indications in humans except the treatment and prevention of breast cancer outside of the United States. The Company currently markets FARESTON® (toremifene citrate) 60 mg tablets, approved for the treatment of metastatic breast cancer in postmenopausal women in the United States, and is developing toremifene in two separate clinical programs for toremifene 80 mg for the ADT indication and toremifene 20 mg for the high grade PIN indication.

In accordance with the terms of the Ipsen Collaboration Agreement, Ipsen agreed to pay the Company €23,000 as a license fee and expense reimbursement, of which €1,500 is being paid in equal installments over a three year period from the date of the Ipsen Collaboration Agreement. In October 2006, the Company received €21,500 (approximately $27,100) from Ipsen as the initial payment for the license fee and expense reimbursement. In September 2007, the Company received €500 (approximately $688) from Ipsen as the first annual installment payment. The second annual installment payment of €500 (approximately $711) was received from Ipsen in September 2008. Pursuant to the Ipsen Collaboration Agreement, the Company is also entitled to receive from Ipsen up to an aggregate of €39,000 in milestone payments depending on the successful development and launch of toremifene in certain countries of the European Territory for the high grade PIN indication, subject to certain conditions, and the ADT indication. In February 2008, the Company earned a milestone of €1,000 (approximately $1,482) with the achievement of the primary endpoint in the toremifene 80 mg ADT Phase III clinical trial. This amount was recognized as collaboration revenue in the first quarter of 2008. Ipsen has agreed to be responsible for and to pay all clinical development, regulatory and launch activities to commercialize toremifene in the European Territory for both the high grade PIN indication and ADT indication. Ipsen has agreed to pay the Company a royalty equal to a graduating percentage of aggregate net sales of products containing toremifene which rates will be dependent on whether such sales are for the high grade PIN indication or the ADT indication. The Company will remain responsible for paying upstream royalties on toremifene to both Orion and UTRF for the PIN indication and to Orion only for the ADT indication. Ipsen will purchase the bulk drug product supply directly from Orion and is responsible for the packaging and labeling of the final product.

The Company recorded deferred revenue of $29,259 related to the Ipsen upfront license fee and expense reimbursement which is expected to be amortized into revenue on a straight-line basis over the estimated five year development period for toremifene in the European Territory. The Company recognized as collaboration revenue

$5,852 for the years ended December 31, 2008 and 2007 and $1,853 for the year ended December 31, 2006 from the amortization of the Ipsen deferred revenue.

University of Tennessee Research Foundation License Agreements

On July 24, 2007, the Company and UTRF entered into the SARM License Agreement to consolidate and replace the Company's two previously existing SARM license agreements with UTRF and to modify and expand certain rights and obligations of each of the parties under both license agreements. Pursuant to the SARM License Agreement, the Company was granted exclusive worldwide rights in all existing SARM technologies owned or controlled by UTRF, including all improvements thereto, and exclusive rights to future SARM technology that may be developed by certain scientists at the University of Tennessee or subsequently licensed to UTRF under certain existing inter-institutional agreements with The Ohio State University.

On September 24, 2007, the Company and UTRF entered into the SERM License Agreement to replace the Company's previously existing exclusive worldwide license agreement for toremifene. Pursuant to the SERM License Agreement, the Company was granted exclusive worldwide rights to UTRF's method of use patents relating to SERMs, including toremifene for chemoprevention of prostate cancer as well as future related SERM technologies that may be developed by certain scientists at the University of Tennessee.

Under the agreements with UTRF, the Company paid to UTRF a one-time, upfront fee of $290 per agreement as consideration for entering into the agreement. The Company is also obligated to pay UTRF annual license maintenance fees and royalties on sublicense revenues and net sales of products.

On December 29, 2008, the Company amended the SARM License Agreement and SERM Agreement (together the "License Amendments") with UTRF. The parties entered into the License Amendments to, among other things, clarify the treatment of certain payments that may be received by the Company from its current and future sublicensees for purposes of determining sublicense fees payable to UTRF by the Company under the terms of the SARM License Agreement and SERM License Agreement, including with respect to the treatment of payments made to the Company in exchange for the sale of the Company's securities in connection with sublicensing arrangements and to provide that any consideration received in connection with an assignment of either agreement will not be treated as sublicense revenue. In consideration for the execution of the License Amendments, the Company has agreed to pay UTRF an aggregate of $540. This payment has been included in research and development expense in the Company's statement of operations for the year ended December 31, 2008. In connection with the execution of the License Amendments, the parties also agreed to dismiss their respective claims and actions relating to the Company's sale of its common stock to Merck in December 2007.

Orion Corporation License and Supply Agreement

On December 29, 2004, the Company entered into the Orion License and Supply Agreement granting the Company exclusive rights to Orion's compound, toremifene, for all products for human uses excluding, however, products for breast cancer sold outside of the United States. Additionally, the Orion License and Supply Agreement requires that Orion will manufacture and supply all of the Company's and the Company's sublicensees' needs for clinical trial and commercial grade material for toremifene-based products developed and marketed in the United States and abroad, including toremifene globally and FARESTON® in the United States. The Orion License and Supply Agreement, which has an effective date of January 1, 2005, replaces an earlier agreement entered into with Orion in 2000, and subsequently amended in 2001 and 2003 ("Original Orion License"). Under the Orion License and Supply Agreement, the Company was required to pay a license fee of $4,826. The term of the Orion License and Supply Agreement will survive for the term of the Company's patents, including the Company's patents to treat complications arising from ADT and the patents it licenses from UTRF for the treatment and/or prevention of high grade PIN and prostate cancer. The term of the Company's method of use patents extend from 2019 to 2023.

Under the Original Orion License, the Company paid Orion $400, which it is allowed to offset along with clinical trial expenses against licensing fees and milestone payments it will pay to Orion if the Company sublicenses rights to its patents to third parties. The Orion License and Supply Agreement retains these provisions and obligates the Company to make future royalty payments of varying amounts for toremifene based products for breast cancer in

(in thousands, except share and per share data)

the United States and to treat or prevent high grade PIN or prostate cancer or to treat complications arising from ADT.

The Company has agreed to achieve specified minimum sales requirements of toremifene in the United States after commercialization of a product or it must pay Orion royalties based on the amount of the shortfall. In addition, the Company is required to pay up to $1,000 if the Company is acquired before receiving marketing approval for the use of toremifene for the prevention or treatment of high grade PIN or prostate cancer or to treat complications arising from ADT. Orion may terminate the Orion License and Supply Agreement if marketing approval for toremifene is not granted in the United States by December 31, 2009.

Ortho Biotech Collaboration and License Agreement

In March 2004, the Company entered into a joint collaboration and license agreement with Ortho Biotech Products, L.P., a subsidiary of Johnson & Johnson ("Ortho Biotech"), for andarine and specified backup SARM compounds. Under the terms of the agreement, the Company received in April 2004 an upfront licensing fee and expense reimbursement totaling $6,687. The upfront licensing fee and expense reimbursement were deferred and amortized into revenue on a straight-line basis over the estimated five year andarine development period. In December 2006, the Company reacquired full rights to develop and commercialize andarine and all backup compounds previously licensed to Ortho Biotech, and the joint collaboration and license agreement was terminated by mutual agreement of the parties. In connection with the termination of the Ortho Biotech agreement, the Company recognized the associated $3,100 balance of deferred revenue as additional collaboration revenue. The Company recognized revenue of $4,295 for the year ended December 31, 2006 from the amortization of the upfront license fee and expense reimbursement.

9. Income Taxes

The Company has incurred net losses since inception and, consequently, has not recorded any U.S. federal and state income taxes. Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes.

The principal components of the Company's net deferred income tax assets consist of the following:

	December 31,	
	2008	2007
Deferred income tax assets:		
Net federal and state operating loss carryforwards	$ 57,719	$ 57,252
Research and development credits	7,908	6,200
Deferred revenue	25,904	7,511
Share-based compensation	3,251	2,010
Other	633	-
Total deferred tax assets	95,415	72,973
Deferred income tax liabilities:		
Depreciation and amortization	27	66
Other	-	284
Total deferred tax liabilities	27	350
Net deferred income tax assets	95,388	72,623
Valuation allowance	(95,388)	(72,623)
	$ -	$ -

Realization of deferred tax assets is dependent upon future earnings, if any, the timing and amount of which are uncertain. Accordingly, the net deferred tax assets have been fully offset by a valuation allowance. The valuation allowance increased by $22,765, $17,027 and $14,690 in 2008, 2007 and 2006, respectively.

At December 31, 2008, the Company had net federal operating loss carryforwards of approximately $151,000, which expire from 2018 to 2028 if not utilized. The Company had state operating loss carryforwards of approximately $134,000, which expire from 2013 to 2023 if not utilized. The Company also had research and development credits of approximately $7,900, which expire from 2018 to 2028 if not utilized.

Both of the net federal and state operating loss carryforwards include approximately $1,900 of deductions related to the exercise of stock options. This amount represents an excess tax benefit as defined under SFAS 123R and has not been included in the gross deferred tax asset reflected for net federal and state operating loss carryforwards. If utilized, the benefits from these deductions will be recorded as an adjustment to additional paid in capital.

The Company has adopted the Financial Accounting Standards Board Interpretation No. 48, *Accounting for Uncertainty in Income Taxes-An Interpretation of FASB Statement No. 109* ("FIN 48"). FIN 48 requires the recognition of the impact of a tax position in the financial statements if that position is more likely than not of being sustained on audit based on the technical merits of the position. At the adoption date of January 1, 2007 and through December 31, 2008, the Company had no unrecognized tax benefits. Utilization of the Company's net operating loss carryforwards may be subject to a substantial annual limitation due to ownership change limitations provided by the Internal Revenue Code of 1986, as amended and similar state provisions. The annual limitations may result in the expiration of net operating loss carryforwards before utilization. The Company has not yet performed a Section 382 change in control study in order to determine if there is a limitation of its net operating loss carryforwards. Until this study is performed, the Company cannot be certain of the use of these loss carryforwards. Additionally, the Company has not yet conducted an in depth study of its research and development credits. This study may result in an increase or decrease to the Company's research and development credits. Until studies are conducted of the Company's net operating loss carryforwards and research and development credits, no amounts are being presented as an uncertain tax position under FIN 48. The Company's net deferred tax assets have been fully offset by a valuation allowance. Therefore, future changes to the Company's unrecognized tax benefits would be offset by an adjustment to the valuation allowance and there would be no impact on the Company's balance sheet, statement of operations, or cash flows. The Company does not expect its unrecognized tax benefits to change significantly over the next 12 months.

The Company is currently open to audit under the statute of limitations by the Internal Revenue Service and the appropriate state income taxing authorities for all years due to the net loss carryforwards from those years. The Company is currently not under examination by the Internal Revenue Service or any other taxing authorities. The Company has not recorded any interest and penalties on any unrecognized tax benefits since its inception.

10. Directors' Deferred Compensation Plan

Since June 30, 2004, non-employee directors have had the opportunity to defer all or a portion of their fees under the Company's Directors' Deferred Compensation Plan until termination of their status as directors. Deferrals can be made into a cash account, a stock account, or a combination of both. Stock accounts will be paid out in the form of Company common stock, except that any fractional shares will be paid out in cash valued at the then current market price of the Company's common stock. Cash accounts and stock accounts under the Directors' Deferred Compensation Plan are credited with interest or the value of any cash and stock dividends, as applicable. Non-employee directors are fully vested in any amounts that they elect to defer under the Directors' Deferred Compensation Plan.

For the years ended December 31, 2008, 2007 and 2006, the Company incurred board of director fee expense of $241, $207 and $163, respectively, of which $178, $183 and $140 was deferred into stock accounts and will be paid in common stock. At December 31, 2008, 54,526 shares of the Company's common stock had been credited to individual director stock accounts under the Directors' Deferred Compensation Plan, and no amounts had been credited to individual director cash accounts under the Directors' Deferred Compensation Plan.

(in thousands, except share and per share data)

11. 401(k) Plan

The Company sponsors a 401(k) retirement savings plan that is available to all eligible employees. The plan is intended to qualify under Section 401(k) of the Internal Revenue Code of 1986, as amended. The plan provides that each participant may contribute up to a statutory limit of their pre-tax compensation which was $15.5 for employees under age 50 and $20.5 for employees 50 and older in calendar year 2008. Employee contributions are held in the employees' name and invested by the plan's trustee. The plan also permits the Company to make matching contributions, subject to established limits. The Company elected to match a portion of employee's contributions to the plan in the amount of $395, $210, and $89 in 2008, 2007 and 2006, respectively.

12. Commitments and Contingencies

Operating Lease Commitments

The Company leases laboratory facilities and office space pursuant to a sublease, which is accounted for as an operating lease. The sublease originally expired December 31, 2008, with options to extend for up to two additional years and is terminable by either party upon 90 days' notice. The Company exercised an option to extend the sublease until December 31, 2009. In December 2007 and July 2008, the Company entered into subleases for additional office space. These new office space subleases are accounted for as operating leases and have terms from January 1, 2008 through April 15, 2015 and August 1, 2008 through April 15, 2015, respectively. These subleases have escalating rent payments and the Company has options to cancel these subleases beginning December 31, 2010 and December 31, 2012, respectively. Total rent expense under these real estate leases was approximately $1,302, $765 and $712 for the years ended December 31, 2008, 2007 and 2006, respectively.

As of December 31, 2008, minimum payments under operating lease arrangements were as follows:

2009	$ 496
2010	811
2011	303
2012	413
Total	$ 2,023

Purchase Commitments

The Company had outstanding contractual purchase obligations of $23 and $280 at December 31, 2008 and 2007, respectively. These outstanding contractual purchase obligations are not recorded in the accompanying financial statements as the amounts represent future obligations, not liabilities, at December 31, 2008 and 2007 respectively.

(in thousands, except share and per share data)

13. Quarterly Financial Data (Unaudited)

The following is a summary of the quarterly results of operations for the years ended December 31, 2008 and 2007:

	2008 Quarters Ended			
	March 31	June 30	September 30	December 31
Revenues:				
Product sales, net	$ 257	$ 274	$ 315	$ 242
Collaboration revenue	4,216	2,734	2,734	2,756
Total revenues	4,473	3,008	3,049	2,998
Costs and expenses:				
Cost of product sales	135	155	192	167
Research and development expenses	13,999	10,370	9,244	10,646
General and administrative expenses	4,250	6,424	6,107	6,324
Total costs and expenses	18,384	16,949	15,543	17,137
Loss from operations	(13,911)	(13,941)	(12,494)	(14,139)
Interest income	1,168	698	568	271
Net loss	$ (12,743)	$ (13,243)	$ (11,926)	$ (13,868)
Net loss per share:				
Basic and diluted	$ (0.35)	$ (0.37)	$ (0.33)	$ (0.38)

	2007 Quarters Ended			
	March 31	June 30	September 30	December 31
Revenues:				
Product sales, net	$ 192	$ 360	$ 268	$ 256
Collaboration revenue	1,463	1,463	1,463	1,661
Total revenues	1,655	1,823	1,731	1,917
Costs and expenses:				
Cost of product sales	109	206	148	158
Research and development expenses	8,007	8,575	9,881	12,045
General and administrative expenses	3,117	3,609	3,182	3,593
Total costs and expenses	11,233	12,390	13,211	15,796
Loss from operations	(9,578)	(10,567)	(11,480)	(13,879)
Interest income	1,454	1,364	1,238	1,089
Net loss	$ (8,124)	$ (9,203)	$ (10,242)	$ (12,790)
Net loss per share:				
Basic and diluted	$ (0.23)	$ (0.26)	$ (0.29)	$ (0.36)

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