INFINITY PHARMACEUTICALS, INC.
Form 10-K
March 13, 2012
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended: December 31, 2011

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: 000-31141

INFINITY PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	33-0655706
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

780 Memorial Drive, Cambridge, Massachusetts 02139

(Address of principal executive offices) (zip code)

Registrant s telephone number, including area code: (617) 453-1000

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

Common Stock, $.001 par value	NASDAQ Global Select Market
(Title of each class)	(Name of each exchange on which listed)

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

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

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 x

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 x No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes x 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. x

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

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

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

The aggregate market value of voting Common Stock held by non-affiliates of the registrant as of June 30, 2011 was $151,010,270 based on the last reported sale price of the registrant s Common Stock on the NASDAQ Global Select Market on that date.

Number of shares outstanding of the registrant s Common Stock as of February 29, 2012: 26,760,058

Documents incorporated by reference:

Portions of our definitive proxy statement to be filed with the Securities and Exchange Commission no later than April 30, 2012 in connection with our 2012 annual meeting of stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K.

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Forward-Looking Information

This Annual Report on Form 10-K contains forward-looking statements regarding our expectations with respect to the possible achievement of discovery and development milestones in 2012, our future discovery and development efforts, our collaborations, our future operating results and financial position, our business strategy, and other objectives for future operations. We often use words such as anticipate, believe, estimate, expect, intend, may, plan, predict, project, target, potential, will, would, could, should, continue, and other words and terms of similar meaning to help identify forward-looking statements, although not all forward-looking statements contain these identifying words. You also can identify them by the fact that they do not relate strictly to historical or current facts. There are a number of important risks and uncertainties that could cause actual results or events to differ materially from those indicated by forward-looking statements. These risks and uncertainties include those inherent in pharmaceutical research and development, such as adverse results in our drug discovery and clinical development activities, decisions made by the U.S. Food and Drug Administration and other regulatory authorities with respect to the development and commercialization of our drug candidates, our ability to obtain, maintain and enforce intellectual property rights for our drug candidates, our dependence on our alliance partners, our ability to obtain any necessary financing to conduct our planned activities, and other risk factors. Please refer to the section entitled Risk Factors in Part I of this report for a description of these risks and uncertainties. Unless required by law, we do not undertake any obligation to publicly update any forward-looking statements.

PART I

Item 1. Business

Overview

We are an innovative drug discovery and development company seeking to discover, develop and deliver to patients best-in-class medicines for difficult-to-treat diseases. We combine proven scientific expertise with a passion for developing novel small molecule drugs that target emerging disease pathways. Our programs in the inhibition of the Hedgehog pathway, the heat shock protein 90 chaperone system, and phosphoinositide-3-kinase are evidence of our innovative approach to drug discovery and development.

Hedgehog Pathway Inhibitor Program. Our lead product candidate is saridegib, also known as IPI-926, a novel, potent, oral molecule that inhibits the Hedgehog pathway by binding to the Smoothened receptor, a protein that plays a critical role in the malignant activation of the Hedgehog pathway. We believe that Smoothened inhibition represents a significant opportunity for addressing a number of difficult-to-treat cancers by disrupting malignant activation of the Hedgehog pathway through multiple, distinct mechanisms. We are evaluating saridegib in a randomized, double-blind Phase 2 clinical trial to assess the safety and efficacy of saridegib compared to placebo in approximately 140 patients with metastatic or locally advanced, inoperable chondrosarcoma. We believe this trial is the first and only randomized clinical trial being conducted in this indication. We expect to complete enrollment in this trial in the second half of 2012 and to report data from this trial in the first half of 2013. In addition, we are actively enrolling patients in an exploratory Phase 2 clinical trial evaluating the safety and efficacy of saridegib in patients with myelofibrosis. We expect to report data from this trial in the second half of 2012. In January 2012, we discontinued our randomized Phase 2 clinical trial evaluating saridegib in combination with gemcitabine, a chemotherapy, in patients with previously untreated, metastatic, pancreatic cancer, following a preliminary analysis of data showing a difference in survival favoring the placebo plus gemcitabine treatment group. This difference in survival was due to a higher rate of progressive disease in the saridegib plus gemcitabine treatment group, and not a result of the safety profile of saridegib. We expect to present final data from this trial after our analyses are complete. Mundipharma International Corporation Limited, or Mundipharma, has commercialization rights outside of the United States for products arising out of our Hedgehog pathway inhibitor program.

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Hsp90 Inhibitor Program. Retaspimycin hydrochloride (HCl), also known as IPI-504, is a novel, potent and selective inhibitor of heat shock protein 90, or Hsp90. Cancer cells depend on Hsp90 to maintain many proteins critical for cancer growth, proliferation and survival in a functional state. Certain anticancer therapies may enhance the dependency of cancer cells on Hsp90. Therefore, combining an Hsp90 inhibitor with another anticancer therapy may enhance cancer cell killing. Retaspimycin HCl is currently being evaluated in a randomized, double-blind Phase 2 clinical trial in combination with docetaxel, a chemotherapy, compared to placebo and docetaxel in approximately 200 patients with second- or third-line non-small cell lung cancer, or NSCLC, who are naive to docetaxel treatment and have a history of heavy smoking. We expect to complete enrollment in this trial in the second half of 2012 and to report data from this trial in the second half of 2013. We are also enrolling patients in a Phase 1b/2 trial to explore the safety and efficacy of retaspimycin HCl in combination with everolimus, an mTOR inhibitor, in NSCLC patients with a KRAS mutation. The objective of this Phase 1b/2 trial is to determine the recommended dose for the combination treatment and to evaluate the safety and clinical activity of retaspimycin HCl in combination with everolimus. We expect to report top-line data from this trial in the second half of 2012. We have worldwide development and commercialization rights for our Hsp90 inhibitor program.

PI3K Inhibitor Program. The phosphoinositide-3-kinases, or PI3Ks, are a family of enzymes involved in key immune cell functions, including cell proliferation and survival, cell differentiation, and cellular trafficking. PI3K-delta and PI3K-gamma, two isoforms of PI3K, play key roles in inflammatory and autoimmune diseases. Additionally, in certain hematologic malignancies, PI3K-gamma and PI3K-delta contribute to the survival and proliferation of cancer cells. Therefore, inhibition of PI3K-delta and PI3Kgamma may have therapeutic potential across a broad range of inflammatory diseases and hematologic malignancies. Our lead compound in this program is IPI-145, a potent, orally-available inhibitor of PI3K-delta and PI3K-gamma. In the second half of 2011, we initiated two Phase 1 clinical trials of IPI-145. The first Phase 1 trial of IPI-145 is a double-blind, randomized, placebo-controlled study designed to evaluate the safety, tolerability, pharmacokinetics and pharmacodynamics of single and multiple escalating doses of IPI-145 in healthy adult subjects. The second Phase 1 trial is an open-label, dose-escalation study designed to evaluate the safety, pharmacokinetics and clinical activity of IPI-145 in patients with advanced hematologic malignancies. Following the determination of the maximum tolerated dose in the dose escalation phase of this study, we plan to conduct an expansion phase in patients with specific hematologic malignancies. We expect to report data from both Phase 1 trials in the second half of 2012 and to commence Phase 2 development of IPI-145 in inflammation in 2012. Mundipharma has commercialization rights outside of the United States for products arising from our PI3K inhibitor program.

Other Programs. In addition to our three clinical stage programs, we have several innovative projects in earlier stages of development, encompassing emerging targets in fields such as cancer metabolism, apoptosis and protein homeostasis. Through our internal discovery efforts, we also discovered IPI-940, a novel, orally available inhibitor of fatty acid amide hydrolase, or FAAH. It is believed that inhibition of FAAH may enable the body to bolster its own analgesic and anti-inflammatory response, and may have applicability in a broad range of painful or inflammatory conditions. We have licensed worldwide development and commercialization rights to our FAAH program to Mundipharma and its independent associated company, Purdue Pharmaceutical Products L.P., or Purdue.

Corporate Information

We were incorporated in California on March 22, 1995 under the name IRORI and, in 1998, we changed our name to Discovery Partners International, Inc., or DPI. In July 2000, we reincorporated in Delaware. On September 12, 2006, DPI completed a merger with Infinity Pharmaceuticals, Inc., or IPI, pursuant to which a wholly-owned subsidiary of DPI merged with and into IPI. IPI was the surviving corporation in the merger, changed its name to Infinity Discovery, Inc., or IDI, and became a wholly owned subsidiary of DPI. In addition, we changed our corporate name from Discovery Partners International, Inc. to Infinity Pharmaceuticals, Inc., and our ticker symbol on the NASDAQ Global Market to INFI. Our common stock currently trades on the NASDAQ Global Select Market.

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Our principal executive offices are located at 780 Memorial Drive, Cambridge, Massachusetts 02139 and our telephone number at that address is (617) 453-1000.

The Infinity logo and all other Infinity product names are trademarks of Infinity or its subsidiary in the United States and in other select countries. We may indicate U.S. trademark registrations and U.S. trademarks with the symbols ® and , respectively. Other third-party logos and product/trade names are registered trademarks or trade names of their respective owners.

Product Development Pipeline

Our product development programs arise from a combination of internally developed programs and strategic licensing arrangements. Whether our programs are developed internally or obtained from a third party, we are drawn to targets that have the potential to represent fundamentally new approaches to how disease is treated, and where we believe we can use our scientific capabilities to identify differentiated drug candidates with well- defined development paths. We seek to take advantage of what we believe to be our innovative approaches to drug discovery and translational medicine, and our robust internal capabilities across all of the key scientific disciplines, including medicinal chemistry, cell biology, biochemistry, pharmacology and molecular pathology. Our goal is to successfully integrate these disciplines to rapidly identify drug candidates, and because discovery does not stop when a drug candidate is identified, we also deploy our discovery capabilities to better understand which populations, or subpopulations, of patients may benefit most from our product candidates. We view biomarkers as an integral part of our drug development strategy and are actively researching biomarkers in each of our clinical development programs.

Our first three clinical candidates, stemming from programs in the inhibition of the Hedgehog pathway, Hsp90, and FAAH, emerged from our internal research efforts. Our fourth clinical candidate, which is directed to the inhibition of PI3K, arose out of our strategic licensing arrangement with Intellikine, Inc., or Intellikine, which was acquired in January 2012 by Takeda Pharmaceutical Company Limited, or Takeda, acting through its Millennium business unit. We refer to our PI3K program licensor as Millennium. In addition to these programs, we have several innovative projects in earlier stages of development, encompassing emerging targets in fields such as cancer metabolism, apoptosis and protein homeostasis.

In building our product development pipeline, we have intentionally pursued targets with applicability across multiple therapeutic areas and indications. This approach gives us several product opportunities in oncology and inflammatory disease areas with broad commercial potential. This strategy also ensures that our success is not dependent on any single product or indication, allowing us to optimize our portfolio on several dimensions in response to new data.

We also believe that the ability to deliver innovative new medicines to patients is an essential component of our mission. To this end, we have retained U.S. commercialization rights to all product candidates in our portfolio that are primarily directed to cancer and inflammatory diseases and we have a substantial royalty interest in the U.S. commercialization of IPI-940, which is primarily directed to pain.

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Our product development programs as of February 29, 2012 are illustrated in the following chart:

During 2012, we expect to advance our product development pipeline by achieving the following program milestones:

Hedgehog Pathway Inhibitor Program

- Completing enrollment in the Phase 2 trial in patients with metastatic or locally advanced, unresectable chondrosarcoma
- Reporting data from the Phase 2 trial in patients with myelofibrosis

Hsp90 Inhibitor Program

- Completing enrollment in the Phase 2 trial in combination with docetaxel in patients with NSCLC
- Reporting top-line data from the dose-escalation portion of the Phase 1b/2 trial in combination with everolimus in NSCLC patients with a KRAS mutation

PI3K Inhibitor Program

- Reporting data from the Phase 1 trial in healthy subjects
- Reporting data from the Phase 1 trial in patients with hematologic malignancies
- Commencing Phase 2 development in inflammation

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Hedgehog Pathway Inhibitor Program

The Hedgehog pathway represents a new way of understanding and potentially attacking the progression and reoccurrence of a broad range of cancers. The Hedgehog pathway is normally active during embryonic development and regulates tissue and organ formation. Malignant activation of the Hedgehog pathway is believed to be responsible for a broad range of cancers through three distinct and independent mechanisms:

Targeting the tumor cell: In some tumors, such as chondrosarcoma, tumor cells signal to themselves through the Hedgehog pathway in a manner that promotes tumor growth. Inhibition of the Hedgehog pathway in these tumors may delay or stop tumor growth. In other cancers, such as basal cell carcinoma and some medulloblastomas, a genetic mutation is responsible for malignant activation of the Hedgehog pathway in tumor cells. In these cancers, inhibition of the Hedgehog pathway may result in tumor cell death and tumor regression.

Targeting the tumor microenvironment: In some cancers, the tumor cells signal through the Hedgehog pathway to stromal cells in the tumor s microenvironment, which provides support for tumor growth and survival. In some malignancies, such as myelofibrosis, the fibrosis itself is responsible for the morbidity and mortality of the disease. Inhibition of the Hedgehog pathway may result in a decrease in fibrosis, resulting in decreased morbidity and mortality.

Targeting residual disease: In some cancers, such as lung cancer, acute lymphocytic leukemia, and ovarian cancer, the Hedgehog pathway may signal to tumor progenitor cells. These tumor progenitor cells may be responsible for tumor regrowth following tumor regression or tumor debulking with chemotherapy or targeted agents. Inhibition of the Hedgehog pathway in these cancers may delay tumor regrowth and prolong survival.

We are developing saridegib, a novel, potent, oral molecule that inhibits the Hedgehog pathway by binding to the Smoothened receptor, a protein that plays a critical role in the malignant activation of the Hedgehog pathway. We believe that Smoothened inhibition represents a significant opportunity for addressing a number of difficult-to-treat cancers by disrupting malignant activation of the Hedgehog pathway through these distinct and independent mechanisms. When systemically administered in multiple preclinical animal models representing a wide variety of cancers, saridegib has demonstrated significant anti-tumor activity and attractive pharmacologic properties such as oral bioavailability, long plasma half-life and duration of action, and dose-dependent inhibition of tumor growth.

We are evaluating saridegib in a Phase 2 clinical trial as a single agent in patients with metastatic or locally advanced, inoperable chondrosarcoma, which we believe is the first and only randomized clinical trial being conducted in this indication. Chondrosarcoma is a rare, life-threatening cancer of the cartilage. In the United States, chondrosarcoma accounts for approximately one-third of the 2,000 cases of primary bone cancer diagnosed each year. The most common locations for chondrosarcoma tumors are the bones of the extremities and the pelvis. Chondrosarcoma predominantly affects middle-aged and older adults, usually occurring in patients over 40 years old, with the incidence gradually increasing up to age 75. As chondrosarcomas are largely resistant to chemotherapy and radiotherapy, the standard therapeutic strategy is surgery. For patients with metastatic disease or with locally advanced tumors who are not candidates for surgery, no treatment has been shown to be effective and there is no established standard of care.

Our randomized, double-blind Phase 2 clinical trial is designed to compare the safety and efficacy of saridegib to matching placebo in approximately 140 patients with metastatic or locally advanced, inoperable chondrosarcoma. Patients in the placebo treatment arm who experience disease progression have the option to cross over and receive saridegib in an open-label arm of the trial. The primary endpoint of the trial is progression-free survival. Secondary endpoints include time to progression, overall survival, overall response rate and response duration. We expect to complete enrollment in this trial in the second half of 2012 and to report data from this trial in the first half of 2013. We have received orphan drug designation from the U.S. Food and Drug Administration, or FDA, and the European Medicines Agency, or EMA, for saridegib for the treatment of chondrosarcoma.

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In addition, we are actively enrolling patients in an exploratory Phase 2 clinical trial evaluating saridegib in patients with myelofibrosis. Myelofibrosis is a blood cancer that affects up to an estimated 18,500 patients in the United States and is marked by the replacement of normal bone marrow by a dense, fibrous stroma. This leads to relocation of blood cell production, or hematopoiesis, from the bone marrow to organs such as the spleen and liver, causing the characteristic debilitating symptoms of abdominal pain and fatigue due to an enlarged spleen, also known as splenomegaly, and pancytopenia, which is the reduction of red and white blood cells and platelets. Inhibition of the Hedgehog pathway may deplete the stroma, potentially resulting in restoration of normal hematopoiesis and resolution of symptoms.

The single-arm Phase 2 trial in myelofibrosis is designed to evaluate the safety and efficacy of saridegib in this population. The primary endpoint of the trial is response rate according to the International Working Group Criteria, which includes a variety of measures such as improvement in bone marrow fibrosis, restoration of normal blood counts, and improvement in splenomegaly. The trial is designed to initially enroll 12 patients and may be expanded to up to 45 patients based on the response rate observed in the first cohort of patients. We expect to report data from this trial in the second half of 2012.

In January 2012, we discontinued our randomized Phase 2 clinical trial evaluating saridegib in combination with gemcitabine in patients with previously untreated, metastatic, pancreatic cancer. A preliminary analysis of data from the study showed a difference in survival favoring the placebo plus gemcitabine arm treatment group. This difference in survival was due to a higher rate of progressive disease in the saridegib plus gemcitabine treatment group. Specifically, the median survival for patients receiving saridegib plus gemcitabine was less than the historical median survival for single-agent gemcitabine of approximately six months, as compared to a median survival for the placebo plus gemcitabine arm of greater than six months. The adverse events observed in both arms of the trial were consistent with the known safety profile of each agent, with no unexpected toxicities. We expect to present final data from this trial after our analyses of the data are complete.

Also in 2011, we initiated an investigator sponsored trial program for saridegib to explore a range of potential indications as well as to study saridegib in combination with both commonly used and emerging treatments.

Mundipharma has commercialization rights outside of the United States for products arising out of our Hedgehog pathway inhibitor program.

Hsp90 Inhibitor Program

Hsp90 is emerging as a major therapeutic target of interest for the treatment of a broad range of cancers. Proteins are responsible for carrying out vital functions of every cell in the human body, and in order for proteins to function properly they must be stable and properly folded. Hsp90 is a member of the chaperone system of proteins which serves to maintain the structure and activity of specific proteins within the cell. The proteins chaperoned by Hsp90 are known as its client proteins, and include cancer-causing forms of ALK, BCR-ABL, mutant EGFR, mutant FLT3 and HER2. Inhibiting the function of Hsp90 knocks out a critical source of support for cancer cells, leading to tumor growth inhibition and cancer cell death. In addition, certain anticancer therapies, such as chemotherapies, may enhance the dependency of cancer cells on Hsp90. Therefore, Hsp90 inhibition in combination with another proven anticancer agent may represent an important approach to treating certain cancers.

Retaspimycin HCl, also known as IPI-504, is a novel, potent and selective inhibitor of Hsp90. Retaspimycin HCl has been shown in preclinical studies to inhibit Hsp90 potently and selectively, thereby inhibiting cancer cell growth. In addition, preclinical studies suggest that retaspimycin HCl preferentially targets and accumulates in tumor tissues. For these reasons, we believe that retaspimycin HCl has broad potential for the treatment of patients with a wide variety of solid and hematologic tumors, including cancers that are resistant to other drugs.

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We have two ongoing clinical trials evaluating retaspimycin HCl, both of which are focused on patients with NSCLC. According to the National Cancer Institute, lung cancer is the second most common form of cancer in the United States, with over 220,000 new cases estimated in 2011. There are two main types of lung cancer: NSCLC and small cell lung cancer. According to the American Cancer Society, approximately 90 percent of all lung cancers are classified as non-small cell. While NSCLC is notoriously difficult to treat, there have been some treatment advances in recent years, largely due to the rapidly evolving understanding of the underlying molecular mechanisms that are responsible for the development of the disease. Despite recent advancements, there are large NSCLC subpopulations who continue to have especially poor prognoses and limited treatment options. These patient subpopulations include patients who have squamous cell carcinoma, a history of heavy smoking, or a KRAS gene mutation, representing up to an estimated 35%, 70% and 30%, respectively, of all NSCLC patients. As our knowledge of genetic mutations and environmental factors that impact the disease progression of NSCLC expands, research is underway to understand how various patient subpopulations respond differently to therapies. Ultimately, our goal is to develop and deliver more effective, targeted (or personalized) treatment approaches that are based on each patient s particular disease characteristics.

Retaspimycin HCl is the only Hsp90 inhibitor for which clinical responses have been observed when combined with chemotherapy in NSCLC patients who do not have a mutation in ALK. For this reason, we are evaluating retaspimycin HCl dosed once weekly in a randomized, double-blind Phase 2 clinical trial in combination with docetaxel, a chemotherapy, compared to placebo and docetaxel in approximately 200 patients with second- or third-line NSCLC , who are naive to docetaxel treatment and have a history of heavy smoking. The primary endpoint of the study is overall survival. We also plan to evaluate the relationship between survival and certain patient characteristics, including histology, tobacco exposure, and a variety of biomarkers. This trial was based, in part, on results from our Phase 1b trial of retaspimycin HCl in combination with docetaxel which showed that retaspimycin HCl, dosed once weekly in combination with docetaxel dosed once every three weeks, was well-tolerated and clinically active in heavily pretreated patients with NSCLC. Partial responses were seen in six of 23, or 26 percent, of patients, with higher response rates observed among heavily pretreated patients with squamous cell carcinoma (n=3/7, or 43%) or a history of heavy smoking (n=6/18, or 33%). In this trial, there were no dose reductions or discontinuations in response to liver function tests, gastrointestinal toxicities were low grade, and no significant ocular toxicities were observed. We expect to complete enrollment in this trial in the second half of 2012 and to report data from this trial in the second half of 2013.

In addition, we are enrolling patients in a Phase 1b/2 trial to explore the safety and efficacy of retaspimycin HCl in combination with everolimus, an mTOR inhibitor, in NSCLC patients with a KRAS mutation. The objective of this Phase 1b/2 trial is to determine the recommended dose for the combination treatment and to evaluate the safety and clinical activity of retaspimycin HCl in combination with everolimus. The endpoint of the Phase 2 trial is overall response rate. In preclinical models, treatment with retaspimycin HCl in combination with an mTOR inhibitor resulted in synergistic activity and tumor regression. We expect to report top-line data from this trial in the second half of 2012.

We have worldwide development and commercialization rights for our Hsp90 inhibitor program.

PI3K Inhibitor Program

PI3Ks are a family of enzymes involved in key immune cell functions, including cell proliferation and survival, cell differentiation, and cellular trafficking. PI3K-delta and PI3K-gamma, two isoforms of PI3K, play key roles in inflammatory and autoimmune diseases. Additionally, in certain hematologic malignancies, PI3K-gamma and PI3K-delta contribute to the survival and proliferation of cancer cells. Therefore, inhibition of PI3K-delta and PI3K-gamma may have therapeutic potential across a broad range of inflammatory diseases and hematologic malignancies. In July 2010, we entered into a development and license agreement with a predecessor company to Millennium under which we obtained global development and commercialization rights to a portfolio of compounds targeting the delta and/or gamma isoforms of PI3K, including our lead compound in this program, IPI-145.

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IPI-145 is a potent, orally-available inhibitor of PI3K-delta and PI3K-gamma. In the second half of 2011, we initiated two Phase 1 clinical trials of IPI-145. The first Phase 1 trial of IPI-145 is a double-blind, randomized, placebo-controlled study designed to evaluate the safety, tolerability, pharmacokinetics and pharmacodynamics of single and multiple escalating doses of IPI-145 in healthy adult subjects. The second Phase 1 trial is an open-label, dose-escalation study designed to evaluate the safety, pharmacokinetics and clinical activity of IPI-145 in patients with advanced hematologic malignancies. Following the determination of the maximum tolerated dose in the dose escalation phase of this study, we plan to conduct an expansion phase in patients with specific hematologic malignancies. We expect to report data from both Phase 1 trials in the second half of 2012 and commence Phase 2 development of IPI-145 in inflammation in 2012.

Mundipharma has commercialization rights outside of the United States for products arising from our PI3K inhibitor program.

Other Programs

In addition to our three clinical stage programs, we have several innovative projects in earlier stages of development, encompassing emerging targets in fields such as cancer metabolism, apoptosis and protein homeostasis. Through our internal discovery efforts, we also discovered IPI-940, a novel, orally available inhibitor of FAAH. It is believed that inhibition of FAAH may enable the body to bolster its own analgesic and anti-inflammatory response, and may have applicability in a broad range of painful or inflammatory conditions. We have licensed worldwide development and commercialization rights to our FAAH program to Mundipharma and Purdue, who are responsible for performing all subsequent research, development and commercialization activities at their own expense. We retain a royalty interest in any worldwide sales of products arising out of the FAAH program.

Strategic Alliances

Since our inception, strategic alliances have been integral to our growth. These alliances have provided access to breakthrough science, significant research support and funding, and innovative drug development programs, all intended to help us realize the full potential of our product pipeline while at the same time allowing us to retaining significant downstream value in our programs through commercialization rights and royalties. Since our inception, all of our revenue has been derived from our strategic alliances, and all of our revenue during 2011, 2010 and 2009 was derived from our alliance with Mundipharma and Purdue.

Mundipharma and Purdue

Scope

In November 2008, we entered into a strategic alliance with Mundipharma and Purdue to develop and commercialize pharmaceutical products. The alliance is governed by strategic alliance agreements that we entered into with each of Mundipharma and Purdue. The agreement with Purdue is focused on the development and U.S. commercialization of products targeting FAAH. The agreement with Mundipharma is focused on the development and commercialization outside of the United States of all products and product candidates covered by the alliance, including those targeting FAAH. The alliance currently includes product candidates that inhibit or target the Hedgehog pathway, FAAH, PI3K, and product candidates arising out of our early discovery projects in all disease fields that are conducted during a prescribed discovery period that runs through December 31, 2013. Our Hsp90 program is expressly excluded from the alliance.

Mundipharma also has the option to include in the alliance certain products or product candidates that we may in-license during the discovery period by paying us a prescribed percentage of the up-front license fee or other acquisition cost, which percentage could be up to 60% of such fee or cost, and by funding research and development costs in the same manner as products or product candidates arising out of our internal discovery

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programs, as described below. If we in-license any product or product candidate during the discovery period for which GLP (Good Laboratory Practice) toxicology studies have not been initiated, as we did with our PI3K inhibitor program in 2010, such products are automatically included in the alliance just as if they arose out of our internal discovery projects.

We have responsibility and decision-making authority for the development of all of our product candidates and performance of early discovery projects on a worldwide basis. There are no joint steering or similar committees for the alliance. Except with respect to products targeting FAAH, for which Mundipharma and Purdue currently have global commercialization rights, and products for which Mundipharma has opted out of development as described below, we will have the right and responsibility to market and sell products arising from the alliance in the United States, and Mundipharma will have the right and responsibility to market and sell products arising from the alliance outside of the United States. Other than pursuant to the strategic alliance agreements, neither we, Purdue nor Mundipharma may develop, manufacture or commercialize products that are directed to the same target or pathway as a product included in the strategic alliance, unless and until a party terminates its rights with respect to such products.

Following entry into the strategic alliance agreements, we consider Mundipharma, Purdue and their respective associated entities to be related parties for financial reporting purposes because of their equity ownership in our company.

Research and Development Funding

For each alliance program other than FAAH, Mundipharma is obligated to reimburse us for all research and development expenses we incur, up to an annual aggregate cap, until the later of December 31, 2013 and the commencement of the first Phase 3 clinical trial of a product candidate, which we refer to as the transition date. The funding caps for the years ending December 31, 2012 and December 31, 2013 are $110 million and $147.5 million, respectively. The funding caps for the years ended December 31, 2011 and December 31, 2010 were $85 million and $65 million, respectively. We are obligated to fund any activities in excess of the annual funding cap ourselves, which we did in 2010 primarily as the result of costs associated with the licensing of our PI3K inhibitor program, and in 2011 primarily due to expanded clinical trial activities for saridegib and the commencement of clinical development of IPI-145. After the transition date for each product candidate, we are obligated to share equally with Mundipharma all research and development costs for such product candidate.

In October 2010, following completion of the first Phase 1 clinical trial of IPI-940, Mundipharma and Purdue exercised their rights to assume all worldwide development and commercialization activities and to fund all subsequent research, development and commercialization expenses for products arising out of our FAAH program. All expenses associated with activities we conduct related to the transition of the FAAH program to Purdue and Mundipharma are reimbursed by Purdue and Mundipharma, with such amounts not counting towards the annual funding cap.

Opt-out and Termination Rights

Mundipharma has the right to opt out of any alliance program, except the Hedgehog program, on an annual basis in November of each year. In the event of an opt-out decision, Mundipharma would continue to provide funding for, in the aggregate, 100% of our contractually budgeted research and development expenses for all programs included in the alliance for the calendar year following the date of such opt out, up to an annual cap. This funding commitment for the year ending December 31, 2013 is $51.3 million for our PI3K and early discovery programs.

Mundipharma may next exercise its right to opt out of the Hedgehog program in November 2013. Mundipharma is obligated to fund the Hedgehog program until it is required to make the decision to opt out or continue funding the program. If Mundipharma elects to opt out of participation in the Hedgehog program in

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November 2013, then Mundipharma would be obligated to make an immediate payment of $23.65 million to us, which we can use on any program in the alliance. In addition, Mundipharma would be obligated to reimburse us for up to $23.65 million of additional expenses incurred during 2013 that are associated with the completion of Phase 2 clinical trials of saridegib that are ongoing at that time. If Mundipharma elects to continue participation in the Hedgehog program in November 2013, it would thereafter have the same annual opt-out right, and one-year residual funding obligation, that applies to the other alliance programs.

In addition, we and Mundipharma each have the right to opt out of continued development of a product candidate after it has reached the transition date, with a one year tail funding obligation for 50% of post-transition date research and development expenses for the product candidate. If a party exercises its right to opt out of the development of a product or product candidate after the transition date, the other party may elect to continue the development and assume responsibility for the worldwide commercialization of such product or product candidate, subject to the payment of a royalty.

Each of the strategic alliance agreements expire when the parties thereto have no further obligations to each other thereunder. Either party may terminate the strategic alliance agreement to which it is a party on 60 days prior written notice if the other party materially breaches the agreement and fails to cure such breach within the 60-day notice period. The agreements may also be terminated by Mundipharma or Purdue in the event of a change in control of Infinity or in the event that, during the discovery period, either Adelene Perkins or Julian Adams is no longer a full-time executive of Infinity. Upon termination of either strategic alliance agreement by us or either Mundipharma or Purdue, either party to the other strategic alliance agreement may terminate that agreement.

Royalties

Except with respect to products that have been in-licensed by us following initiation of GLP toxicology studies, for which no royalties will be payable between the parties, we are obligated to pay Mundipharma a 5% royalty on net sales of the commercialized products until such time as Mundipharma has recovered all research and development expenses paid to us under the research program prior to the applicable transition date. After such cost recovery, we are obligated to pay a tiered, 1% to 3% royalty on U.S. net sales of those products. For products in which Mundipharma has opted-out of development prior to the transition date, we are obligated to pay royalties of 1% to 5% of worldwide net sales as a function of the stage of development of the applicable product candidate at the time of opt out. For products in which either party has opted-out of development following the transition date, the commercializing party is obligated to pay the other party a 5% royalty on net sales.

Mundipharma is obligated to pay us a tiered, 10% to 20% royalty on annual net sales outside of the United States of each product arising out of the alliance, and Purdue is obligated to pay us a tiered, 10% to 20% royalty on annual net sales of FAAH products in the United States. Royalties are payable until the later to occur of the expiration of specified patent rights and the expiration of non-patent regulatory exclusivities in a country, provided that if royalties are payable solely on the basis of non-patent regulatory exclusivity, each of the rates above is reduced by one-half. In addition, all royalties payable under the strategic alliance agreements, whether by us, Mundipharma or Purdue, are subject to reduction on account of third party royalty payments or patent litigation damages or settlements, with any such reductions capped at 50% of the amounts otherwise payable during the applicable royalty payment period.

Securities Purchase and Line of Credit Agreements

In connection with the entry into the strategic alliance agreements, we also entered into a securities purchase agreement and a line of credit agreement in November 2008 with Purdue and its independent associated company, Purdue Pharma L.P., or PPLP. In March 2009, Purdue assigned its interest under the line of credit agreement to PPLP.

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Under the securities purchase agreement, we issued and sold in two separate closings an aggregate of six million shares of our common stock and warrants to purchase up to an aggregate of six million shares of our common stock, for an aggregate purchase price of $75 million. An equal number of securities were sold to each purchaser.

The line of credit agreement provided for the borrowing by us of one or more unsecured loans up to an aggregate maximum principal amount of $50 million. In November 2011, we borrowed the full $50 million available to us under the line of credit. The loan matures and is payable in full, including principal and any accrued interest, on April 1, 2019, which we refer to as the maturity date, and will be subordinate to any senior indebtedness that we may incur. The loan bears interest at a fluctuating rate set at the prime rate on the business day prior to the funding of the loan and is reset on the last business day of each month ending thereafter. Interest is compounded on each successive three-month anniversary of the funding of the loan. The loan may be prepaid without penalty or premium prior to the maturity date. Even if we prepay the loan, we do not have the ability to borrow under the line of credit agreement again. We have certain rights to repay the loan in shares of our common stock.

Millennium. In July 2010, we entered a development and license agreement with a predecessor company to Millennium under which we obtained rights to discover, develop and commercialize pharmaceutical products targeting the delta and/or gamma isoforms of PI3K, including IPI-145. We paid a $13.5 million up-front license fee to obtain rights to this program. In addition to developing IPI-145, we are seeking to identify additional novel delta, gamma and dual delta/gamma-specific inhibitors of PI3K for future development. We are obligated to pay up to $25 million in success-based milestones for the development of two distinct product candidates, and up to $450 million in success-based milestones for the approval and commercialization of two distinct products. In addition, we are obligated to pay Millennium tiered royalties on net sales ranging from single digits to low teens upon successful commercialization of products licensed to us, which are payable until the later to occur of the expiration of specified patent rights and the expiration of non-patent regulatory exclusivities in a country, subject to reduction in certain circumstances.

Under the agreement, we obtained rights to direct all development and commercialization activities worldwide for products arising from the agreement for all therapeutic indications. For a product in which the first Phase 2 clinical trial conducted is in an oncology indication, which we refer to as an oncology product, Millennium will have the option, at the end of Phase 2 clinical development and upon payment of an option fee, to convert its royalty interest in U.S. sales into the right to share in 50% of profits and losses on U.S. development and commercialization, and to participate in up to 30% of the detailing effort for these products in the United States. Mundipharma, pursuant to its strategic alliance agreement with us, has commercialization rights outside the United States for products arising out of our PI3K inhibitor program.

Millennium may terminate its participation rights in any oncology product with 12 months prior written notice to us, after which Millennium s participation rights would revert back to the original milestone- and royalty-based payment structure, provided that Millennium would not be entitled to receive royalty payments for net sales occurring prior to the termination date and certain specified milestone payments.

Other than pursuant to the agreement, neither we nor Millennium may research, develop or commercialize products directed to the delta and/or gamma isoforms of PI3K which meet certain selectivity criteria, except that Millennium may research, develop or commercialize such products that it was researching, developing or commercializing on its own or with a third party prior to its acquisition of Intellikine.

The agreement expires when the parties have no further obligations to each other thereunder, unless earlier terminated. Either party may terminate the agreement on 75 days prior written notice if the other party materially breaches the agreement and fails to cure such breach within the applicable notice period, provided that the notice period is reduced to 30 days where the alleged breach is non-payment. Additionally, Millennium may terminate the agreement upon 30 days prior written notice if we or a related party bring an action challenging

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the validity of any of the licensed patents, provided that we have not withdrawn such action before the end of the 30-day notice period. We may terminate the agreement at any time upon 180 days prior written notice provided after the end of the research term that is currently set to expire in July 2013.

Intellectual Property

Our intellectual property consists of patents, trademarks, trade secrets and know-how. Our ability to compete effectively depends in large part on our ability to obtain patents and trademarks for our technologies and products, maintain trade secrets, operate without infringing the rights of others and prevent others from infringing our proprietary rights. We will be able to protect our proprietary technologies from unauthorized use by third parties only to the extent that they are covered by valid and enforceable patents, or are effectively maintained as trade secrets. As a result, patents or other proprietary rights are an essential element of our business.

In the United States, we have 20 issued or allowed patents related to our clinical-stage programs expiring on various dates between 2024 and 2029 as well as numerous pending patent applications and foreign counterpart patent filings which relate to our proprietary technologies. These patents and patent applications include claims directed to compositions of matter, pharmaceutical compositions, methods of treatment, and methods of making these compositions for multiple applications.

We have eight issued or allowed U.S. patent applications covering saridegib and related molecules, which expire on various dates between 2025 and 2029, excluding any patent term extension. These patents include composition of matter, pharmaceutical composition, method of treatment, and synthetic method claims.

We have 11 issued U.S. patents covering retaspimycin HCl and related molecules, which expire on various dates between 2024 and 2025, excluding any patent term extension. These patents and allowed patent applications include composition of matter, pharmaceutical composition, method of treatment, and synthetic method claims.

In addition, as of February 29, 2012, we had several hundred additional patents and patent applications filed worldwide, substantially all of which pertain to our product development programs. Any patents that may issue from our pending patent applications would expire between 2024 and 2032, excluding any patent term extension. These patents and patent applications disclose composition of matter, pharmaceutical composition, methods of use and synthetic methods.

Our policy is to obtain and enforce the patents and proprietary technology rights that are commercially important to our business. We intend to continue to file patent applications to protect technology and compounds that are commercially important to our business, and to do so in countries where we believe it is commercially reasonable and advantageous to do so. We also rely on trade secrets to protect our technology where patent protection is deemed inappropriate or unobtainable. We protect our proprietary technology and processes, in part, by confidentiality agreements with our employees, consultants, collaborators and contractors.

Competition

The pharmaceutical and biotechnology industries are intensely competitive. Many companies, including biotechnology, chemical and pharmaceutical companies, are actively engaged in research and development of drugs for the treatment of the same diseases and conditions as our current and potential future product candidates. Many of these companies have substantially greater financial and other resources, larger research and development staffs and more extensive marketing and manufacturing organizations than we do. In addition, some of them have considerably more experience than us in preclinical testing, clinical trials and other regulatory approval procedures. There are also academic institutions, governmental agencies and other research organizations that are conducting research in areas in which we are working. They may also develop products that may be competitive with our product candidates, either on their own or through collaborative efforts.

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We and our alliance partners expect to encounter significant competition for any drugs we develop. Companies that complete clinical trials, obtain required regulatory approvals and commence commercial sales of their products before their competitors may achieve a significant competitive advantage. We are aware that many other companies or institutions are pursuing the development of drugs in the areas in which we are currently seeking to develop our own drug candidates, and there may be other companies working on competitive projects of which we are not aware. For example, we believe that the following companies, among others, are seeking to develop compounds targeting the Hedgehog pathway:

- Genentech, a member of the Roche Group,, which recently received FDA approval of vismodegib for the treatment of certain patients with advanced basal cell carcinoma, and which we believe has an active investigator-sponsored trial program exploring other applications for vismodegib;
- Pfizer, Inc., which we believe is conducting two Phase 2 clinical trials of PF-04449913;
- Novartis AG, which we believe is conducting a two Phase 2 trials and multiple Phase 1 trials of erismodegib and a Phase 1 trial of LEQ-506
- Bristol Myers Squibb Company, through its collaboration with Exelixis, Inc., which we believe is conducting multiple Phase 1 clinical trials of BMS-833923;
- Millennium, which we believe is conducting a Phase 1 clinical trial of TAK-441; and

In addition, we believe that the following companies, among others, are seeking to develop compounds targeting Hsp90:

- Synta Pharmaceuticals Corp., which we believe is conducting Phase 2 clinical trials of ganetespib;
- Novartis AG, which we believe is conducting multiple Phase 1 and 2 clinical trials of AUY-922 and a Phase 1 clinical trial of HSP990;
- Astex Pharmaceuticals, Inc., which we believe is conducting multiple Phase 1 clinical trials of AT-13387;
- Celgene Corporation, which we believe is conducting a Phase 1 clinical trial of ABI-010;
- Daiichi Sankyo, Inc., which we believe is conducting a Phase 1 clinical trial of DS-2248;
- Debiopharm Group, which we believe is conducting a Phase 1 clinical trial of Debio 0932;
- Exelixis, Inc., which we believe is conducting a Phase 1 clinical trial of XL888;

Kyowa Hakko Kirin Co. Ltd., which we believe is conducting a Phase 1 clinical trial of KW-2478; and

Myrexis, Inc., which we believe is conducting a Phase 1 clinical trial of MPC-3100.

We believe that the following companies, among others, are seeking to develop compounds targeting the delta and/or gamma isoforms of PI3K:

Gilead Sciences, Inc., which we believe is conducting multiple Phase 1 and Phase 2 clinical trials of GS-1101 and has completed a Phase 1 clinical trial of CAL-263; and

Amgen, Inc., which we believe is conducting a Phase 1 clinical trial of AMG-319.

Our competitors may commence and complete clinical testing of their product candidates, obtain regulatory approvals, and begin commercialization of their products sooner than we and/or our collaborative partners may for our own drug candidates. These competitive products may have superior safety or efficacy, or be manufactured less expensively, than our drug candidates. If we are unable to compete effectively against these companies on the basis of safety, efficacy or cost, then we may not be able to commercialize our drug candidates or achieve a competitive position in the market. This would adversely affect our business.

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Research and Development

As of February 29, 2012, our research and development group consisted of 145 individuals, of whom over 37 percent hold Ph.D. or M.D. degrees and over an additional 33 percent hold other advanced degrees. Our research and development group is focusing on drug discovery, preclinical research, clinical trials and manufacturing technologies. Our research and development expense for the years ended December 31, 2011, 2010 and 2009 was approximately $108.6 million, $99.2 million and $77.9 million, respectively. Reimbursement for our strategic collaborator-sponsored research and development expenses totaled approximately $88.5 million, $67.0 million and $46.5 million, for the years ended December 31, 2011, 2010 and 2009, respectively. In calculating strategic collaborator-sponsored research and development expenses, we have included all reimbursement for our research and development efforts and excluded license fees. Our remaining research and development expense is company-sponsored.

Manufacturing and Supply

We rely primarily on third parties, and in some instances we rely on only one third party, to manufacture critical raw materials, drug substance and final drug product for our research, preclinical development and clinical trial activities. Commercial quantities of any drugs we seek to develop will have to be manufactured in facilities and by processes that comply with FDA and other regulations, and we plan to rely on third parties to manufacture commercial quantities of any products we successfully develop.

A natural product is utilized in the production of saridegib. This product is currently supplied from naturally available plant material. If saridegib is successfully developed we will need to acquire and process sufficient amounts of plant material to satisfy commercial demand for the product. We are currently seeking to identify alternative sources of this natural product, including identifying additional locations where this plant naturally occurs and establishing sustainable methods for growing this plant or producing this natural product in a controlled environment.

Sales and Marketing

We currently have limited marketing, and no commercial sales or distribution, capabilities. We do, however, currently have commercialization rights in the United States for products arising out of all of our programs, except the FAAH program, and worldwide commercialization rights for our Hsp90 inhibitor program, including retaspimycin HCl. In order to commercialize any of these drugs if and when they are approved for sale in the United States, we will need to, and we intend to, develop the necessary marketing, sales and distribution capabilities.

Government Regulation

Government authorities in the United States and in other countries extensively regulate, among other things, the research, development, testing, manufacturing, storage, recordkeeping, approval, promotion, labeling, advertising, distribution, marketing, post-approval monitoring and reporting, sampling, and export and import of pharmaceutical products such as those we are developing. We cannot provide assurance that any of our drug candidates will prove to be safe or effective, will receive regulatory approvals or will be successfully commercialized.

New Drug Approval in the United States

In the United States, drugs and drug testing are regulated by the FDA and other federal agencies, as well as by state and local government authorities. Before any of our products may be marketed in the United States, we must comply with the Federal Food, Drug and Cosmetic Act, which generally involves the following:

preclinical laboratory and animal tests performed under the FDA s GLP regulations;

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development of manufacturing processes which conform to FDA-mandated current Good Manufacturing Practices, or cGMPs;

submission and acceptance of an investigational new drug application, or IND, which must become effective before clinical trials may begin in the United States;

adequate and well-controlled human clinical trials to establish the safety and efficacy of the drug candidate for its intended use; and

the submission to and review and approval by the FDA of a New Drug Application, or NDA, prior to any commercial sale or shipment of a product.

The testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approval will be granted on a timely basis, if at all.

Preclinical testing. Preclinical tests include laboratory evaluation of a drug candidate, its chemistry, formulation, safety and stability, as well as animal studies to assess the potential safety and efficacy of the drug candidate. The conduct of the preclinical tests must comply with federal regulations and requirements including good laboratory practices. We must submit the results of the preclinical tests, together with manufacturing information, analytical data and a proposed clinical trial protocol to the FDA as part of an IND. An IND is a request for FDA authorization to administer an investigational drug to humans. Such authorization must be secured prior to interstate shipment and administration of any new drug that is not the subject of an approved new drug application. Preclinical tests and studies can take several years to complete, and despite completion of those tests and studies, the FDA may not permit clinical testing to begin.

The IND process. The FDA requires a 30-day waiting period after the filing of each IND application before clinical trials may begin. This waiting period is designed to allow the FDA to review the IND to determine whether human research subjects will be exposed to unreasonable health risks. At any time during this 30-day period or at any time thereafter, the FDA may raise concerns or questions about the conduct of the trials as outlined in the IND and impose a clinical hold. In this case, the IND sponsor and the FDA must resolve any outstanding concerns before clinical trials can begin or continue. The IND application process may become extremely costly and substantially delay development of our products. Moreover, positive results of preclinical tests will not necessarily indicate positive results in clinical trials.

Prior to initiation of clinical studies, an independent Institutional Review Board, or IRB, at each medical site proposing to conduct the clinical trial must review and approve each study protocol and study subjects must provide informed consent.

Clinical trials. Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

Phase 1: The drug candidate is initially introduced into healthy human subjects or patients and tested for safety, dosage tolerance, bioavailability, absorption, distribution, excretion and metabolism. For cancer drugs such as those we are developing, this phase of study is generally conducted in patients.

Phase 2: The drug candidat