IMMUNOGEN INC
Form 424B5
June 17, 2009

Use these links to rapidly review the document
TABLE OF CONTENTS
Table of Contents

Table of Contents

Filed pursuant to Rule 424(b)(5)
Registration No. 333-144488

This preliminary prospectus supplement and the accompanying prospectus relate to an effective registration statement under the Securities Act of 1933, but the information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell nor do they seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JUNE 17, 2009

Preliminary Prospectus Supplement No. 2
(To Prospectus dated August 13, 2007)

5,000,000 Shares

Common Stock

We are offering 5,000,000 shares of our common stock. Our common stock is quoted on the Nasdaq Global Market under the symbol "IMGN." The last reported sale price of our common stock on the Nasdaq Global Market on June 16, 2009 was $7.55 per share.

Investing in our common stock involves risks. See "Risk Factors" beginning on page S-5 of this prospectus supplement.

	Per Share	Total
Public Offering Price	$	$
Underwriting Discounts and Commissions	$	$
Proceeds to Us, Before Expenses	$	$

We have granted the underwriters a 30-day option to purchase up to an additional 750,000 shares of our common stock solely to cover over-allotments of shares, if any. If the underwriters exercise this option in full, the total underwriting discounts and commissions will be $, and our total proceeds, before expenses, will be $.

We expect to deliver the shares of our common stock to purchasers on or about June , 2009.

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

Oppenheimer & Co.

Sole Book-Running Manager

Morgan Joseph

Co-Manager

The date of this prospectus supplement is June , 2009.

Table of Contents

TABLE OF CONTENTS

For further information regarding us and our financial information, you should refer to our recent filings with the Securities and Exchange Commission, or SEC. See "Where You Can Find More Information."

You should rely only on the information contained or incorporated by reference in this prospectus supplement or the accompanying prospectus. Neither we nor the underwriters have authorized anyone to provide you with information different from that contained in this prospectus. We are offering to sell, and seeking offers to buy, common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus supplement and the accompanying prospectus is accurate only as of the date of this prospectus supplement and the accompanying prospectus, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our common stock.

No action is being taken in any jurisdiction outside the United States to permit a public offering of the common stock or possession or distribution of this prospectus supplement or the accompanying prospectus in that jurisdiction. Persons who come into possession of this prospectus supplement or the accompanying prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus supplement and the accompanying prospectus applicable to that jurisdiction.

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

On July 11, 2007, we filed with the SEC a registration statement on Form S-3 (File No. 333-144488) utilizing a shelf registration process relating to the securities described in this prospectus supplement, which registration statement was declared effective on August 13, 2007. Under this shelf registration process, we may, from time to time, sell up to $75,000,000 of common stock, of which we sold $25,000,000 in June 2008.

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this common stock offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into the prospectus. The second part, the accompanying prospectus, gives more general information, some of which does not apply to this offering.

If the description of the offering varies between this prospectus supplement and the accompanying prospectus, you should rely on the information contained in this prospectus supplement. However, if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in the accompanying prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Unless we have indicated otherwise, or the context otherwise requires, references in this prospectus supplement and the accompanying prospectus to "ImmunoGen," "the Company," "we," "us" and "our" or similar terms are to ImmunoGen, Inc. and its subsidiaries.

Table of Contents

SUMMARY

This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus or incorporated by reference in the accompanying prospectus. This summary does not contain all of the information that you should consider before deciding to invest in our common stock. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the "Risk Factors" section contained in this prospectus supplement and our consolidated financial statements and the related notes and the other documents incorporated by reference in the accompanying prospectus.

ImmunoGen, Inc.

We develop novel, targeted therapeutics for the treatment of cancer using our expertise in cancer biology, monoclonal antibodies, highly potent cytotoxic, or cell-killing, agents, and the design of linkers that enable these agents to be stably attached to the antibodies while in the blood stream and release in their fully active form after delivery to a cancer cell. Our Targeted Antibody Payload, or TAP, technology uses antibodies to deliver our potent cytotoxic agents specifically to cancer cells, and consists of a tumor-targeting monoclonal antibody with one of our proprietary cell-killing agents attached using one of our engineered linkers. The antibody component enables a TAP compound to bind specifically to cancer cells that express a particular target antigen, the highly potent cytotoxic agent serves to kill the cancer cell, and the engineered linker controls the release and activation of the cytotoxic agent inside the cancer cell. Our TAP technology is designed to enable the creation of highly effective, well-tolerated anticancer products.

We believe that our TAP technology and our expertise in antibodies will enable us to become a leader in the application of antibodies for the treatment of cancer. We plan to achieve this goal through the development of our own anticancer products and through out-licenses of our TAP technology to other companies. The out-licensing of our TAP technology allows us to expand the number of anticancer therapeutics in which we have a financial interest by enabling the creation of TAP compounds with antibodies proprietary to other companies to which we do not have access for our own development programs.

Our Product Candidates

The most advanced compound in our pipeline is trastuzumab-DM1, or T-DM1. It consists of our DM1 cell-killing agent attached to the trastuzumab (Herceptin®) antibody developed by Genentech, Inc. (now a wholly-owned subsidiary of the Roche Group) using our SMCC linker. T-DM1 is in development by Genentech in the United States and by Roche outside the United States, following Roche opting-in to Genentech for international rights to this compound in late 2007. In February 2009, Genentech and Roche began Phase III development of T-DM1 for second-line treatment of advanced HER2-positive breast cancer, or HER2+ BC, in patients who progressed on previous Herceptin®-containing regimen. Additionally, in March 2009, Genentech completed patient enrollment in a third-line Phase II trial in patients who progressed on previous Herceptin®-containing regimen as well as Tykerb®-containing regimen. This Phase II trial could be used to gain accelerated approval of T-DM1 in the United States if the trial findings are compelling. Genentech has disclosed that it expects the final data from this trial to be available in the first quarter of 2010. T-DM1 also is being evaluated as a first-line treatment for advanced HER2+ BC in a Phase II trial that began in July 2008. Genentech and Roche have also disclosed that they are considering trials to evaluate the compound in the adjuvant setting to treat early HER2+ BC. In initial Phase I and II clinical testing, T-DM1 has shown objective activity when used as a single agent to treat advanced HER2+ BC that had progressed on trastuzumab (Herceptin®) used with chemotherapy. Many of the patients in the

Table of Contents

Phase II (non-pivotal) trial begun in July 2007 for which Genentech recently presented data had received lapatinib (Tykerb®) plus chemotherapy as well as trastuzumab.

In addition to T-DM1, there are five other TAP compounds in clinical testing through our own programs and those of our partners. Our IMGN901 compound is being evaluated for the treatment of CD56-positive solid tumors, such as small-cell lung cancer and Merkel cell carcinoma, and also for multiple myeloma, a type of liquid tumor. IMGN901 has achieved objective responses in both solid and liquid tumors used as a single agent in early clinical testing. We plan to initiate a trial later this year to evaluate IMGN901 used in combination with an approved treatment regimen for multiple myeloma, as relapsed cancers typically are treated with combination therapy. We created the CD19-targeting TAP compound, SAR3419, for the treatment of non-Hodgkin's lymphoma and licensed it to sanofi-aventis as part of a broader collaboration. We expect the first clinical findings with SAR3419 to be reported in the fourth quarter of 2009. We are also developing our IMGN388 compound for the treatment of solid tumors and expect the first clinical data will be reported in the fourth quarter of 2009 for IMGN388. Two additional TAP compounds BIIB015 and BT-062 advanced into Phase I testing in 2008 through our collaborations with Biogen Idec Inc. and Biotest AG, respectively. In addition to these compounds, a number of potential other anticancer compounds are in earlier stages of development. We recently announced that we elected to discontinue further internal development of our IMGN242 compound and to move this product candidate into our out-licensing portfolio. IMGN242 has shown encouraging safety and preliminary indications of activity in early clinical testing, but its slow pace of progress caused the continued internal development of IMGN242 to shift below other, higher priority programs in our portfolio.

Our collaborative partners include: Genentech (a wholly owned subsidiary of the Roche Group), sanofi-aventis, Biogen Idec, Biotest, Centocor, Inc. (a wholly owned subsidiary of Johnson & Johnson), Bayer HealthCare and Amgen Inc. Our broadest collaborative relationships are with sanofi-aventis and Genentech.

Our TAP technology

Traditional chemotherapeutic agents typically kill any rapidly-dividing cell, including healthy cells, which can result in significant adverse side effects and limit their ability to be dosed to full therapeutic potential. The invention of monoclonal antibodies enables scientists to create proteins that bind specifically to antigen targets found on cancer cells. This scientific advancement led to the development of a few highly successful anticancer antibody therapeutics (CD20-binding Rituxan®, HER2-binding Herceptin®, CD52-binding Campath® and EGFR-binding Erbitux® and Vectibix®). For many of the targets that have been identified on cancer cells, however, the binding of a monoclonal antibody to the target has little or no anticancer effect.

We created our TAP technology to significantly enhance the anticancer activity of monoclonal antibodies. We attach using our engineered linkers our highly potent cell-killing agents to such antibodies for targeted delivery to cancer cells. Our TAP technology can be used with antibodies that have anticancer activity of their own, such as trastuzumab, to achieve enhanced anticancer activity. The bigger opportunity, however, potentially may be use of our TAP technology with antibodies with limited or no anticancer activity of their own, enabling effective antibody-based therapies to be developed for many more types of cancers.

We developed our proprietary cell-killing agents specifically for attachment to antibodies for delivery to cancer cells. Our agents are 1000- to 10,000-fold more potent than traditional chemotherapy agents and can be attached to antibodies using our engineered linkers. Our linkers enable the cell-killing agent to remain stably attached to the antibody while the TAP compound is moving through the bloodstream and controls the release of the cell-killing agent inside a cancer cell. We have shown that different linkers work better for some cancers than for others and have developed a portfolio of linkers which we continue to expand to enable the best product design to be created for each TAP

Table of Contents

compound. We use our cell-killing agents and linkers with our own antibodies to develop compounds for our proprietary product portfolio, and also outlicense our technology to other companies.

Corporate Information

We were organized as a Massachusetts corporation in March 1981. Our principal offices are located at 830 Winter Street, Waltham, Massachusetts 02451, and our telephone number is (781) 895-0600. We maintain a web site at *www.immunogen.com*, where certain information about us is available. Please note that the information contained on the website is not a part of this document.

Herceptin® is a registered trademark of Genentech, a wholly owned member of the Roche Group. Tykerb® is a registered trademark of GlaxoSmithKline, plc. Rituxan® is a registered trademark of Biogen Idec Inc. Campath® is a registered trademark of Genzyme Corporation. Erbitux® is a registered trademark of ImClone Systems, a wholly owned subsidiary of Eli Lilly and Company. Vectibix® is a registered trademark of Amgen Inc. Other brands, names and trademarks contained in this prospectus supplement, the accompanying prospectus or the documents incorporated by reference herein and therein are the property of their respective owners.

Table of Contents

The Offering

Common stock offered by us	5,000,000 shares
Common stock to be outstanding immediately after this offering	56,141,586 shares
Nasdaq Global Market symbol	IMGN
Use of proceeds	We estimate that the net proceeds from the sale of the shares of our common stock in this offering will be $35.6 million ($41.0 million if the underwriters exercise their over-allotment in full) after payment of the estimated underwriting discounts, commissions and our estimated offering expenses. We intend to use the net proceeds of this offering for our operations, including, but not limited to, general corporate purposes, which may include research and development expenditures, clinical trial expenditures, manufacture of the components of product candidates in development and of the product candidates themselves, acquisitions of new technologies, capital expenditures, investments and working capital. See "Use of Proceeds" on page S-20.
Dividend Policy	We do not expect to pay any cash dividends on our common stock for the foreseeable future.
Risk factors	See "Risk Factors" beginning on page S-5 and other information included in this prospectus supplement for a discussion of factors you should carefully consider before deciding to invest in shares of the common stock.

The number of shares of our common stock outstanding after this offering is based on 51,141,586 shares of our common stock outstanding as of June 15, 2009. Unless otherwise indicated, the number of shares of common stock presented in this prospectus supplement excludes the following:

- 5,557,831 shares of our common stock issuable upon exercise of stock options outstanding under our stock option plans as of that date, at a weighted average exercise price of $6.34;
- 182,693 shares of our common stock issuable upon redemption of deferred stock units by non-employee directors;
- 2,734,693 shares of our common stock available as of that date for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants; and
- up to 750,000 shares of our common stock that may be purchased by the underwriters to cover over-allotments, if any.

Table of Contents

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the following risk factors and all other information contained in this prospectus supplement and the accompanying prospectus and incorporated by reference into this prospectus supplement and the accompanying prospectus before purchasing our common stock. The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties that we are unaware of, or that we currently deem immaterial, also may become important factors that affect us. If any of such risks or the risks described below occur, our business, financial condition or results of operations could be materially and adversely affected. In that case, the trading price of our common stock could decline, and you may lose some or all of your investment.

Risks Related to our Business

We have a history of operating losses and expect to incur significant additional operating losses.

We have generated operating losses since our inception. As of March 31, 2009, we had an accumulated deficit of $310.7 million. For the nine months ended March 31, 2009 and 2008, we generated losses of $21.1 million and $20.1 million, respectively, and for the years ended June 30, 2008, 2007 and 2006, we generated losses of $32.0 million, $19.0 million and $17.8 million, respectively. We may never be profitable. We expect to incur substantial additional operating expenses over the next several years as our research, development, preclinical testing, clinical trials and collaborator support activities continue. We intend to continue to invest significantly in our product candidates. Further, we expect to invest significant resources supporting our existing collaborators as they work to develop, test and commercialize TAP and other antibody compounds. We or our collaborators may encounter technological or regulatory difficulties as part of this development and commercialization process that we cannot overcome or remedy. We may also incur substantial marketing and other costs in the future if we decide to establish marketing and sales capabilities to commercialize our product candidates. None of our or our collaborators' product candidates has generated any commercial revenue and our only revenues to date have been primarily from upfront and milestone payments, research and development support and clinical materials reimbursement from our collaborative partners. We do not expect to generate revenues from the commercial sale of our product candidates or royalties on revenues from the commercial sale of our collaborators' product candidates for several years, and we may never generate revenues from the commercial sale of products. Even if we do successfully develop products that can be marketed and sold commercially, we will need to generate significant revenues from those products to achieve and maintain profitability. Even if we do become profitable, we may not be able to sustain or increase profitability on a quarterly or annual basis.

If we are unable to obtain additional funding when needed, we may have to delay or scale back some of our programs or grant rights to third parties to develop and market our product candidates.

We will continue to expend substantial resources developing new and existing product candidates, including costs associated with research and development, acquiring new technologies, conducting preclinical studies and clinical trials, obtaining regulatory approvals and manufacturing products as well as providing certain support to our collaborators in the development of their products. We believe that our current working capital, not including the net proceeds of this offering, and future payments, if any, from our collaboration arrangements will be sufficient to meet our current and projected operating and capital requirements for fiscal year 2010 and at least a portion of the

Table of Contents

following fiscal year. However, we may need additional financing sooner due to a number of factors including:

- if either we or any of our collaborators incur higher than expected costs or experience slower than expected progress in developing product candidates and obtaining regulatory approvals;
- lower revenues than expected under our collaboration agreements; or
- acquisition of technologies and other business opportunities that require financial commitments.

Additional funding may not be available to us on favorable terms, or at all. We may raise additional funds through public or private financings, collaborative arrangements or other arrangements. Debt financing, if available, may involve covenants that could restrict our business activities. If we are unable to raise additional funds through equity or debt financing when needed, we may be required to delay, scale back or eliminate expenditures for some of our development programs or grant rights to develop and market product candidates that we would otherwise prefer to internally develop and market. If we are required to grant such rights, the ultimate value of these product candidates to us may be reduced.

If our TAP technology does not produce safe, effective and commercially viable products, our business will be severely harmed.

Our TAP technology yields novel product candidates for the treatment of cancer. No TAP product candidate has obtained regulatory approval and the most advanced TAP product candidate is in Phase III clinical testing. Our TAP product candidates and/or our collaborators' TAP product candidates may not prove to be safe, effective or commercially viable treatments for cancer and our TAP technology may not result in any future meaningful benefits to us or for our current or potential collaborative partners. Furthermore, we are aware of only one compound that is a conjugate of an antibody and a cytotoxic small molecule that has obtained approval by the U.S. Food and Drug Administration, or FDA, and is based on technology similar to our TAP technology. If our TAP technology fails to generate product candidates that are safe, effective and commercially viable treatments for cancer, or fails to obtain FDA approval, our business will be severely harmed.

Clinical trials for our and our collaborative partners' product candidates will be lengthy and expensive and their outcome is uncertain.

Before obtaining regulatory approval for the commercial sale of any product candidates, we and our collaborative partners must demonstrate through clinical testing that our product candidates are safe and effective for use in humans. Conducting clinical trials is a time-consuming, expensive and uncertain process and typically requires years to complete. Our, as well as our collaborative partners', most advanced TAP product candidate is in Phase III clinical testing. In our industry, the results from preclinical studies and early clinical trials often are not predictive of results obtained in later-stage clinical trials. Some compounds that have shown promising results in preclinical studies or early clinical trials subsequently fail to establish sufficient safety and efficacy data necessary to obtain regulatory approval. At any time during the clinical trials, we, our collaborative partners, or the FDA might delay or halt any clinical trials of our product candidates for various reasons, including:

- occurrence of unacceptable toxicities or side effects;
- ineffectiveness of the product candidate;
- insufficient drug supply;
- negative or inconclusive results from the clinical trials, or results that necessitate additional studies or clinical trials;

Table of Contents

delays in obtaining or maintaining required approvals from institutions, review boards or other reviewing entities at clinical sites;

delays in patient enrollment;

insufficient funding or a reprioritization of financial or other resources; or

other reasons that are internal to the businesses of our collaborative partners, which they may not share with us.

Any failure or substantial delay in successfully completing clinical trials and obtaining regulatory approval for our product candidates or our collaborative partners' product candidates could severely harm our business.

We and our collaborative partners are subject to extensive government regulations and we and our collaborative partners may not be able to obtain necessary regulatory approvals.

We and our collaborative partners may not receive the regulatory approvals necessary to commercialize our product candidates, which would cause our business to be severely harmed. Pharmaceutical product candidates, including those in development by us and our collaborative partners, are subject to extensive and rigorous government regulation. The FDA regulates, among other things, the development, testing, manufacture, safety, record-keeping, labeling, storage, approval, advertising, promotion, sale and distribution of pharmaceutical products. If our potential products or our collaborators' potential products are marketed abroad, they will also be subject to extensive regulation by foreign governments. None of our product candidates has been approved for sale in the United States or any foreign market. The regulatory review and approval process, which includes preclinical studies and clinical trials of each product candidate, is lengthy, complex, expensive and uncertain. Securing FDA approval requires the submission of extensive preclinical and clinical data and supporting information to the FDA for each indication to establish the product candidate's safety and efficacy. Data obtained from preclinical studies and clinical trials are susceptible to varying interpretation, which may delay, limit or prevent regulatory approval. The approval process may take many years to complete and may involve ongoing requirements for post-marketing studies. In light of the limited regulatory history of monoclonal antibody-based therapeutics, regulatory approvals for our or our collaborative partners' product candidates may not be obtained without lengthy delays, if at all. Any FDA or other regulatory approvals of our or our collaborative partners' product candidates, once obtained, may be withdrawn. The effect of government regulation may be to:

delay marketing of potential products for a considerable period of time;

limit the indicated uses for which potential products may be marketed;

impose costly requirements on our activities; and

place us at a competitive disadvantage to other pharmaceutical and biotechnology companies.

We may encounter delays or rejections in the regulatory approval process because of additional government regulation from future legislation or administrative action or changes in FDA policy during the period of product development, clinical trials and FDA regulatory review. Failure to comply with FDA or other applicable regulatory requirements may result in criminal prosecution, civil penalties, recall or seizure of products, total or partial suspension of production or injunction, as well as other regulatory action against our product candidates or us. Outside the United States, our ability to market a product is contingent upon receiving clearances from the appropriate regulatory authorities. The foreign regulatory approval process includes similar risks to those associated with the FDA approval process. In addition, we are, or may become, subject to various federal, state and local laws, regulations and recommendations relating to safe working conditions, laboratory and manufacturing practices, the experimental use of animals and the use and disposal of hazardous substances, including radioactive compounds and infectious disease agents, used in connection with

Table of Contents

our research work. If we fail to comply with the laws and regulations pertaining to our business, we may be subject to sanctions, including the temporary or permanent suspension of operations, product recalls, marketing restrictions and civil and criminal penalties.

Our and our collaborative partners' product candidates will remain subject to ongoing regulatory review even if they receive marketing approval. If we or our collaborative partners fail to comply with continuing regulations, we could lose these approvals and the sale of our products could be suspended.

Even if we or our collaborative partners receive regulatory approval to market a particular product candidate, the approval could be conditioned on us or our collaborative partners conducting costly post-approval studies or could limit the indicated uses included in product labeling. Moreover, the product may later cause adverse effects that limit or prevent its widespread use, force us or our collaborative partners to withdraw it from the market or impede or delay our or our collaborative partners' ability to obtain regulatory approvals in additional countries. In addition, the manufacturer of the product and its facilities will continue to be subject to FDA review and periodic inspections to ensure adherence to applicable regulations. After receiving marketing approval, the manufacturing, labeling, packaging, adverse event reporting, storage, advertising, promotion and record-keeping related to the product remain subject to extensive regulatory requirements. We or our collaborative partners may be slow to adapt, or we or our collaborative partners may never adapt, to changes in existing regulatory requirements or adoption of new regulatory requirements.

If we or our collaborative partners fail to comply with the regulatory requirements of the FDA and other applicable U.S. and foreign regulatory authorities, or if previously unknown problems with our or our partners' products, manufacturers or manufacturing processes are discovered, we could be subject to administrative or judicially imposed sanctions, including:

- restrictions on the products, manufacturers or manufacturing processes;
- warning letters;
- civil or criminal penalties;
- fines;
- injunctions;
- product seizures or detentions;
- import bans;
- voluntary or mandatory product recalls and publicity requirements;
- suspension or withdrawal of regulatory approvals;
- total or partial suspension of production; and
- refusal to approve pending applications for marketing approval of new drugs or supplements to approved applications.

Any one of these could have a material adverse effect on our business or financial condition.

If our collaborative partners fail to perform their obligations under our agreements with them, or determine not to continue with clinical trials for particular product candidates, our business could be severely impacted.

Our strategy for the development and commercialization of our product candidates depends, in large part, upon the formation and maintenance of collaborative arrangements. Collaborations provide an opportunity for us to:

generate cash flow and revenue;

Table of Contents

fund some of the costs associated with our internal research and development, preclinical testing, clinical trials and manufacturing;

seek and obtain regulatory approvals faster than we could on our own;

successfully commercialize existing and future product candidates; and

secure access to targets which, due to intellectual property restrictions, would otherwise be unavailable to our technology.

If we fail to secure or maintain successful collaborative arrangements, the development and marketing of compounds that use our technology may be delayed, scaled back or otherwise may not occur. In addition, we may be unable to negotiate other collaborative arrangements or, if necessary, modify our existing arrangements on acceptable terms. We cannot control the amount and timing of resources our collaborative partners may devote to our product candidates. Our collaborative partners may separately pursue competing product candidates, therapeutic approaches or technologies to develop treatments for the diseases targeted by us or our collaborative efforts, or may decide, for reasons not known to us, to discontinue development of product candidates under our agreements with them. Any of our collaborative partners may slow or discontinue the development of a product candidate covered by a collaborative arrangement for reasons that can include, but are not limited to:

a change in the collaborative partner's strategic focus as a result of merger, management changes, adverse business events or other causes;

a change in the priority of the product candidate relative to other programs in the collaborator's pipeline;

a reassessment of the patent situation related to the compound or its target;

a change in the anticipated competition for the product candidate;

preclinical studies and clinical trial results; and

a reduction in the financial resources the collaborator can or is willing to apply to the development of new compounds.

Even if our collaborative partners continue their collaborative arrangements with us, they may nevertheless determine not to actively pursue the development or commercialization of any resulting products. Also, our collaborative partners may fail to perform their obligations under the collaborative agreements or may be slow in performing their obligations. Our collaborative partners can terminate our collaborative agreements under certain conditions. The decision to advance a product that is covered by a collaborative agreement through clinical trials and ultimately to commercialization is in the discretion of our collaborative partners. If any collaborative partner were to terminate or breach our agreements, fail to complete its obligations to us in a timely manner, or decide to discontinue its development of a product candidate, our anticipated revenue from the agreement and from the development and commercialization of the products would be severely limited. If we are not able to establish additional collaborations or any or all of our existing collaborations are terminated and we are not able to enter into alternative collaborations on acceptable terms, or at all, our continued development, manufacture and commercialization of our product candidates could be delayed or scaled back as we may not have the funds or capability to continue these activities. If our collaborators fail to successfully develop and commercialize TAP compounds, our business would be severely harmed.

Table of Contents

We depend on a small number of collaborators for a substantial portion of our revenue. The loss of, or a material reduction in activity by, any one of these collaborators could result in a substantial decline in our revenue.

We have and will continue to have collaborations with a limited number of companies. As a result, our financial performance depends on the efforts and overall success of these companies. Also, the failure of any one of our collaborative partners to perform its obligations under its agreement with us, including making any royalty, milestone or other payments to us, could have an adverse effect on our financial condition. Further, any material reduction by any one of our collaborative partners in its level of commitment of resources, funding, personnel and interest in continued development under its agreement with us could have an adverse effect on our financial condition. In July 2003, we entered into a discovery, development and commercialization collaboration with sanofi-aventis that entitles us to receive committed research funding. From inception through the end of the research program, we recorded $81.5 million of committed research and development support revenue under this agreement. At this time, there are no current agreements that entitle us to committed research funding. As a result, we expect our research and development revenue to decline in future years. Also, if consolidation trends in the healthcare industry continue, the number of our potential collaborators could decrease, which could have an adverse impact on our development efforts. If a present or future collaborator of ours were to be involved in a business combination, its continued pursuit and emphasis on our product development program could be delayed, diminished or terminated.

If our collaborative partners' requirements for clinical materials to be manufactured by us are significantly lower than we have estimated, our financial results and condition could be adversely affected.

We procure certain components of finished conjugate, including ansamitocin P3, DM1, DM4 and linker, on behalf of our collaborators. In order to meet our commitments to our collaborative partners, we are required to enter into agreements with third parties to produce these components well in advance of our production of clinical materials on behalf of our collaborative partners. If our collaborative partners do not require as much clinical material as we have contracted to produce, we may not be able to recover our investment in these components and we may suffer significant losses. Collaborators have discontinued development of product candidates in the past and in the periods subsequent to these discontinuations, we had significantly reduced demand for conjugated material which adversely impacted our financial results.

In addition, we operate a conjugate manufacturing facility. A portion of the cost of operating this facility, including the cost of manufacturing personnel, is reimbursed by our collaborators based on the number of batches of preclinical and clinical materials produced on their behalf. If we produce fewer batches of clinical materials for our collaborators, a smaller amount of the cost of operating the conjugate manufacturing facility will be charged to our collaborative partners and our financial condition could be adversely affected.

If our antibody requirements for clinical materials to be manufactured are significantly higher than we estimated, the inability to procure additional antibody in a timely manner could impair our ability to initiate or advance our clinical trials.

We rely on third-party suppliers to manufacture antibodies used in our own proprietary product candidates. Due to the specific nature of the antibody and availability of production capacity, there is significant lead time required by these suppliers to provide us with the needed materials. If our antibody requirements for clinical materials to be manufactured are significantly higher than we estimated, we may not be able to readily procure additional antibody which would impair our ability to advance our clinical trials currently in process or initiate additional trials. For example, enrollment of new patients into all clinical trials of IMGN901 was suspended in late 2006 due to insufficient

Table of Contents

supply of IMGN901. Additional material has since been produced. Study 003 began re-enrolling new patients in March 2007. Study 001 was reopened for new patient enrollment in late 2007, and patient enrollment in Study 002 resumed in the third quarter of fiscal 2008 in both the United States and the United Kingdom. We believe we have resolved these supply issues and that we have sufficient supply of IMGN901 to complete these three trials on a timely basis. There can be no assurance that we will not have future supply problems that could delay or stop our clinical trials or otherwise could have a material adverse effect on our business.

We currently rely on one third-party manufacturer with commercial production experience to produce our cell-killing agents, DM1 and DM4.

We rely on third-party suppliers to manufacture materials used to make TAP compounds. Our cell-killing agents DM1 and DM4 collectively DMx are manufactured from a precursor, ansamitocin P3. As part of preparing to produce TAP compounds for later-stage clinical trials and commercialization, we have transitioned from our original supplier of ansamitocin P3, as well as our single supplier that converts ansamitocin P3 to DMx, to one larger company with more commercial production experience. Any delay or interruption in our supply of DMx could lead to a delay or interruption in our manufacturing operations and preclinical studies and clinical trials of our product candidates and our collaborators' product candidates, which could negatively affect our business.

We may be unable to establish the manufacturing capabilities necessary to develop and commercialize our and our collaborative partners' potential products.

Currently, we have only one conjugate manufacturing facility that we use to manufacture conjugated compounds for us and our collaborative partners for preclinical studies and early-stage clinical testing. While partners of ours have established separate manufacturing capacity, we do not currently have the manufacturing capacity needed to make our product candidates for commercial sale. In addition, our manufacturing capacity may be insufficient to complete all clinical trials contemplated by us and our collaborative partners over time. We intend to rely in part on third-party contract manufacturers to produce sufficiently large quantities of drug materials that are and will be needed for later-stage clinical trials and commercialization of our potential products. We are currently in the process of developing our relationships with third-party manufacturers that we believe will be necessary to continue the development of our product candidates. Third-party manufacturers may not be able to meet our needs with respect to timing, quantity or quality of materials. If we are unable to contract for a sufficient supply of needed materials on acceptable terms, or if we should encounter delays or difficulties in our relationships with manufacturers, our clinical trials may be delayed, thereby delaying the submission of product candidates for regulatory approval and the market introduction and subsequent commercialization of our potential products. Any such delays may lower our revenues and potential profitability.

In addition to the outsourcing of manufacturing, we may develop our manufacturing capacity in part by expanding our current facilities. This activity would require substantial additional funds and we would need to hire and train significant numbers of employees to staff these facilities. We may not be able to develop manufacturing facilities that are sufficient to produce drug materials for later-stage clinical trials or commercial use. We and any third-party manufacturers that we may use must continually adhere to current Good Manufacturing Practice, or cGMP, regulations enforced by the FDA through its facilities inspection program. If our facilities or the facilities of third-party manufacturers cannot pass a pre-approval plant inspection, the FDA will not grant approval to our product candidates. In complying with these cGMP regulations and foreign regulatory requirements, we and any of our third-party manufacturers will be obligated to expend time, money and effort on production, record-keeping and quality control to assure that our potential products meet applicable specifications and other requirements. If we or any third-party manufacturer with whom we may contract fail to maintain regulatory compliance, we or the third party may be subject to fines and/or manufacturing operations may be suspended.

Table of Contents

We have only one conjugate manufacturing facility and any prolonged and significant disruption at that facility could impair our ability to manufacture our and our collaborative partners' product candidates for clinical testing.

Currently, we are contractually obligated to manufacture Phase I and non-pivotal Phase II clinical products for companies licensing our TAP technology. We manufacture this material, as well as material for our own product candidates, in our conjugate manufacturing facility. We have only one such manufacturing facility in which we can manufacture clinical products. Our current manufacturing facility contains highly specialized equipment and utilizes complicated production processes developed over a number of years that would be difficult, time-consuming and costly to duplicate. Any prolonged disruption in the operations of our manufacturing facility would have a significant negative impact on our ability to manufacture products for clinical testing on our own and would cause us to seek additional third-party manufacturing contracts, thereby increasing our development costs. Even though we carry business interruption insurance policies, we may suffer losses as a result of business interruptions that exceed the coverage available or any losses may be excluded under our insurance policies. Certain events, such as natural disasters, fire, political disturbances, sabotage or business accidents, which could impact our current or future facilities, could have a significant negative impact on our operations by disrupting our product development efforts until such time as we are able to repair our facility or put in place third-party contract manufacturers to assume this manufacturing role.

Unfavorable pricing regulations, third-party reimbursement practices or healthcare reform initiatives applicable to our product candidates could limit our potential product revenue.

Antibody-based anticancer products are often much more costly to produce than traditional chemotherapeutics and tend to have significantly higher prices. Factors that help justify the price include the high mortality associated with many types of cancer and the need for more and better treatment options.

Regulations governing drug pricing and reimbursement vary widely from country to country. Some countries require approval of the sales price of a drug before it can be marketed. Some countries restrict the physicians that can authorize the use of more expensive medications. Some countries establish treatment guidelines to help limit the use of more expensive therapeutics and the pool of patients that receive them. In some countries, including the United States, third-party payers frequently seek discounts from list prices and are increasingly challenging the prices charged for medical products. Because our product candidates are in the development stage, we do not know the level of reimbursement, if any, we will receive for any products that we are able to successfully develop. If the reimbursement for any of our product candidates is inadequate in light of our development and other costs, our ability to achieve profitability would be affected.

We believe that the efforts of governments and third-party payors to contain or reduce the cost of healthcare will continue to affect the business and financial condition of pharmaceutical and biopharmaceutical companies. A number of legislative and regulatory proposals to change the healthcare system in the United States and other major healthcare markets have been proposed and adopted in recent years. For example, the U.S. Congress enacted a limited prescription drug benefit for Medicare recipients as part of the Medicare Prescription Drug, Improvement and Modernization Act of 2003. While the program established by this statute may increase demand for any products that we are able to successfully develop, if we participate in this program, our prices will be negotiated with drug procurement organizations for Medicare beneficiaries and are likely to be lower than prices we might otherwise obtain. Non-Medicare third-party drug procurement organizations may also base the price they are willing to pay on the rate paid by drug procurement organizations for Medicare beneficiaries. In addition, ongoing initiatives in the United States have and will continue to increase pressure on drug pricing. The announcement or adoption of any such initiative could have an adverse effect on potential revenues from any product candidate that we may successfully develop.

Table of Contents

We may be unable to establish sales and marketing capabilities necessary to successfully commercialize our potential products.

We currently have no direct sales or marketing capabilities. We anticipate relying on third parties to market and sell most of our primary product candidates or we may outlicense these products prior to the time when these capabilities are needed. If we decide to market our potential products through a direct sales force, we would need either to hire a sales force with expertise in pharmaceutical sales or to contract with a third party to provide a sales force which meets our needs. We may be unable to establish marketing, sales and distribution capabilities necessary to commercialize and gain market acceptance for our potential products and be competitive. In addition, co-promotion or other marketing arrangements with third parties to commercialize potential products could significantly limit the revenues we derive from these potential products, and these third parties may fail to commercialize our compounds successfully.

If our product candidates or those of our collaborative partners do not gain market acceptance, our business will suffer.

Even if clinical trials demonstrate the safety and efficacy of our and our collaborative partners' product candidates and the necessary regulatory approvals are obtained, our and our collaborative partners' product candidates may not gain market acceptance among physicians, patients, healthcare payors and other members of the medical community. The degree of market acceptance of any product candidates that we or our collaborative partners develop will depend on a number of factors, including:

their degree of clinical efficacy and safety;

their advantage over alternative treatment methods;

our/the marketer's and our collaborative partners' ability to gain acceptable reimbursement and the reimbursement policies of government and third-party payors; and

the quality of the distribution capabilities for product candidates, both ours and our collaborative partners.

Physicians may not prescribe any of our future products until such time as clinical data or other factors demonstrate the safety and efficacy of those products as compared to conventional drug and other treatments. Even if the clinical safety and efficacy of therapies using our products is established, physicians may elect not to recommend the therapies for any number of other reasons, including whether the mode of administration of our products is effective for certain conditions, and whether the physicians are already using competing products that satisfy their treatment objectives. Physicians, patients, third-party payors and the medical community may not accept and use any product candidates that we, or our collaborative partners, develop. If our products do not achieve significant market acceptance and use, we will not be able to recover the significant investment we have made in developing such products and our business will be severely harmed.

We may be unable to compete successfully.

The markets in which we compete are well established and intensely competitive. We may be unable to compete successfully against our current and future competitors. Our failure to compete successfully may result in pricing reductions, reduced gross margins and failure to achieve market acceptance for our potential products. Our competitors include research institutions, pharmaceutical companies and biotechnology companies, such as Wyeth and Seattle Genetics, Inc. Many of these organizations have substantially more experience and more capital, research and development,

Table of Contents

regulatory, manufacturing, sales, marketing, human and other resources than we do. As a result, they may:

- develop products that are safer or more effective than our product candidates;
- obtain FDA and other regulatory approvals or reach the market with their products more rapidly than we can, reducing the potential sales of our product candidates;
- devote greater resources to market or sell their products;
- adapt more quickly to new technologies and scientific advances;
- initiate or withstand substantial price competition more successfully than we can;
- have greater success in recruiting skilled scientific workers from the limited pool of available talent;
- more effectively negotiate third-party licensing and collaboration arrangements; and
- take advantage of acquisition or other opportunities more readily than we can.

A number of pharmaceutical and biotechnology companies are currently developing products targeting the same types of cancer that we target, and some of our competitors' products have entered clinical trials or already are commercially available.

Our product candidates, if approved and commercialized, will also compete against well-established, existing, therapeutic products that are currently reimbursed by government health administration authorities, private health insurers and health maintenance organizations. In addition, if our product candidates are approved and commercialized, we may face competition from generic products, or biosimilars. While there currently is no process in the United States for the submission or approval of biosimilars based upon abbreviated data packages or a showing of sameness to another approved product, there is public dialogue at the FDA and in the U.S. Congress regarding the scientific and statutory basis upon which biosimilars could be approved and marketed in the United States. In Europe, however, the European Agency for the Evaluation of Medical Products has issued guidelines for approving products through an abbreviated pathway, and biosimilars have been approved in Europe. If a biosimilar version of one of our potential products were approved in the United States or Europe, it could have a negative effect on sales of the potential product and our financial condition.

We face and will continue to face intense competition from other companies for collaborative arrangements with pharmaceutical and biotechnology companies, for relationships with academic and research institutions and for licenses to proprietary technology. In addition, we anticipate that we will face increased competition in the future as new companies enter our markets and as scientific developments surrounding antibody-based therapeutics for cancer continue to accelerate. While we will seek to expand our technological capabilities to remain competitive, research and development by others may render our technology or product candidates obsolete or noncompetitive or result in treatments or cures superior to any therapy developed by us.

If we are unable to protect our intellectual property rights adequately, the value of our technology and our product candidates could be diminished.

Our success depends in part on obtaining, maintaining and enforcing our patents and other proprietary rights and our ability to avoid infringing the proprietary rights of others. Patent law relating to the scope of claims in the biotechnology field in which we operate is still evolving, is surrounded by a great deal of uncertainty and involves complex legal, scientific and factual questions. To date, no consistent policy has emerged regarding the breadth of claims allowed in biotechnology patents. Accordingly, our pending patent applications may not result in issued patents. Although we own several patents, the issuance of a patent is not conclusive as to its validity or enforceability.

Table of Contents

Through litigation, a third party may challenge the validity or enforceability of a patent after its issuance.

Also, patents and applications owned or licensed by us may become the subject of interference proceedings before the U.S. Patent and Trademark Office or a patent office in a foreign jurisdiction to determine priority of invention that could result in substantial cost to us. An adverse decision in an interference proceeding may result in our loss of rights under a patent or patent application. It is unclear how much protection, if any, will be given to our patents if we attempt to enforce them or if they are challenged in court or in other proceedings. A competitor may successfully challenge our patents or a challenge could result in limitations of the patents' coverage. In addition, the cost of litigation or interference proceedings to uphold the validity of patents can be substantial. If we are unsuccessful in these proceedings, third parties may be able to use our patented technology without paying us licensing fees or royalties. Moreover, competitors may infringe our patents or successfully avoid them through design innovation. To prevent infringement or unauthorized use, we may need to file infringement claims, which are expensive and time-consuming. In an infringement proceeding, a court may decide that a patent of ours is not valid. Even if the validity of our patents were upheld, a court may refuse to stop the other party from using the technology at issue on the ground that its activities are not covered by our patents.

In recent years, policymakers have also proposed reforming U.S. patent laws and regulations. For example, patent reform legislation was introduced in both houses of the U.S. Congress in 2009, and the Senate Judiciary Committee approved a patent reform bill in April 2009. In general, the proposed legislation attempts to address issues surrounding the enforceability of patents and the increase in patent litigation by, among other things, changing the way damages for patent infringement are calculated, establishing new procedures for challenging patents and establishing different methods for invalidating patents. While we cannot predict what form any new patent reform laws or regulations ultimately may take, final legislation could introduce new substantive rules and procedures for challenging patents, and certain reforms that make it easier for competitors to challenge our patents could have a material adverse effect on our business and prospects.

Policing unauthorized use of our intellectual property is difficult, and we may not be able to prevent misappropriation of our proprietary rights, particularly in countries where the laws may not protect such rights as fully as in the United States.

In addition to our patent rights, we also rely on unpatented technology, trade secrets, know-how and confidential information. Third parties may independently develop substantially equivalent information and techniques or otherwise gain access to or disclose our technology. We may not be able to effectively protect our rights in unpatented technology, trade secrets, know-how and confidential information. We require each of our employees, consultants and corporate partners to execute a confidentiality agreement at the commencement of an employment, consulting or collaborative relationship with us. Further, we require that all employees enter into assignment of invention agreements as a condition of employment. However, these agreements may not provide effective protection of our information or, in the event of unauthorized use or disclosure, they may not provide adequate remedies.

Any inability to license from third parties their proprietary technologies or processes which we use in connection with the development and manufacture of our product candidates may impair our business.

Other companies, universities and research institutions have or may obtain patents that could limit our ability to use, manufacture, market or sell our product candidates or impair our competitive position. As a result, we would have to obtain licenses from other parties before we could continue using, manufacturing, marketing or selling our potential products. Any necessary licenses may not be available on commercially acceptable terms, if at all. If we do not obtain required licenses, we may not be able to market our potential products at all or we may encounter significant delays in product

Table of Contents

development while we redesign products or methods that are found to infringe on the patents held by others.

We may incur substantial costs as a result of litigation or other proceedings relating to patent and other intellectual property rights held by third parties and we may be unable to protect our rights to, or commercialize, our product candidates.

Patent litigation is very common in the biotechnology and pharmaceutical industries. Third parties may assert patent or other intellectual property infringement claims against us with respect to our technologies, products or other matters. From time to time, we have received correspondence from third parties alleging that we infringe their intellectual property rights. Any claims that might be brought against us alleging infringement of patents may cause us to incur significant expenses and, if successfully asserted against us, may cause us to pay substantial damages and limit our ability to use the intellectual property subject to these claims. Even if we were to prevail, any litigation would be costly and time-consuming and could divert the attention of our management and key personnel from our business operations. Furthermore, as a result of a patent infringement suit, we may be forced to stop or delay developing, manufacturing or selling potential products that incorporate the challenged intellectual property unless we enter into royalty or license agreements. There may be third-party patents, patent applications and other intellectual property relevant to our potential products that may block or compete with our products or processes. In addition, we sometimes undertake research and development with respect to potential products even when we are aware of third-party patents that may be relevant to our potential products, on the basis that such patents may be challenged or licensed by us. If our subsequent challenge to such patents were not to prevail, we may not be able to commercialize our potential products after having already incurred significant expenditures unless we are able to license the intellectual property on commercially reasonable terms. We may not be able to obtain royalty or license agreements on terms acceptable to us, if at all. Even if we were able to obtain licenses to such technology, some licenses may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. Ultimately, we may be unable to commercialize some of our potential products or may have to cease some of our business operations, which could severely harm our business.

We use hazardous materials in our business, and any claims relating to improper handling, storage or disposal of these materials could harm our business.

Our research and development and manufacturing activities involve the controlled use of hazardous materials, chemicals, biological materials and radioactive compounds. We are subject to federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of these materials and certain waste products. Although we believe that our safety procedures for handling and disposing of these materials comply with the standards prescribed by applicable laws and regulations, we cannot completely eliminate the risk of accidental contamination or injury from these materials. In the event of such an accident, we could be held liable for any resulting damages, and any liability could exceed our resources. We may be required to incur significant costs to comply with these laws in the future. Failure to comply with these laws could result in fines and the revocation of permits, which could prevent us from conducting our business.

We face product liability risks and may not be able to obtain adequate insurance.

While we secure waivers from all participants in our clinical trials, the use of our product candidates during testing or after approval entails an inherent risk of adverse effects, which could expose us to product liability claims. Regardless of their merit or eventual outcome, product liability claims may result in:

decreased demand for our product;

Table of Contents

injury to our reputation and significant negative media attention;

withdrawal of clinical trial volunteers;

costs of litigation;

distraction of management; and

substantial monetary awards to plaintiffs.

We may not have sufficient resources to satisfy any liability resulting from these claims. We currently have $5 million of product liability insurance for products which are in clinical testing. This coverage may not be adequate in scope to protect us in the event of a successful product liability claim. Further, we may not be able to maintain our current insurance or obtain general product liability insurance on reasonable terms and at an acceptable cost if we or our collaborative partners begin commercial production of our proposed product candidates. This insurance, even if we can obtain and maintain it, may not be sufficient to provide us with adequate coverage against potential liabilities.

We depend on our key personnel and we must continue to attract and retain key employees and consultants.

We depend on our key scientific and management personnel. Our ability to pursue the development of our current and future product candidates depends largely on retaining the services of our existing personnel and hiring additional qualified scientific personnel to perform research and development. We will also need to hire personnel with expertise in clinical testing, government regulation, manufacturing, marketing and finance. Attracting and retaining qualified personnel will be critical to our success. We may not be able to attract and retain personnel on acceptable terms given the competition for such personnel among biotechnology, pharmaceutical and healthcare companies, universities and non-profit research institutions. Failure to retain our existing key management and scientific personnel or to attract additional highly qualified personnel could delay the development of our product candidates and harm our business.

Our stock price can fluctuate significantly and results announced by us and our collaborators can cause our stock price to decline.

Our stock price can fluctuate significantly due to business developments announced by us and by our collaborators, as a result of market trends and as a result of our low stock price and daily trading volume. The business developments that could impact our stock price include disclosures related to clinical findings with compounds that make use of our TAP technology, new collaborations and clinical advancement or discontinuation of product candidates that make use of our TAP technology. Our stock price can also fluctuate significantly with the level of overall investment interest in small-cap biotechnology stocks.

Our operating results have fluctuated in the past and are likely to continue to do so in the future. Our revenue is unpredictable and may fluctuate due to the timing of non-recurring licensing fees, decisions of our collaborative partners with respect to our agreements with them, reimbursement for manufacturing services, the achievement of milestones and our receipt of the related milestone payments under new and existing licensing and collaboration agreements. Revenue historically recognized under our prior collaboration agreements may not be an indicator of revenue from any future collaborations. In addition, our expenses are unpredictable and may fluctuate from quarter to quarter due to the timing of expenses, which may include obligations to manufacture or supply product or payments owed by us under licensing or collaboration agreements. It is possible that our quarterly and/or annual operating results will not meet the expectations of securities analysts or investors, causing the market price of our common stock to decline. We believe that quarter-to-quarter and year-to-year comparisons of our operating results are not good indicators of our future performance and should not be relied upon to predict the future performance of our stock price.

Table of Contents

We do not intend to pay cash dividends on our common stock.

We have not paid cash dividends since our inception and do not intend to pay cash dividends in the foreseeable future. Therefore, shareholders will have to rely on appreciation in our stock price, if any, in order to achieve a gain on an investment.

Risks Related to this Offering of Our Common Stock

We may allocate the net proceeds from this offering in ways that you and other shareholders may not approve.

We intend to use the net proceeds from this offering for general corporate purposes, which may include:

- research and development expenditures;
- clinical trial expenditures;
- manufacture of the components of product candidates in development and of the product candidates themselves;
- acquisitions of new technologies;
- capital expenditures;
- investments; and
- working capital.

Our management will have broad discretion as to the application of these net proceeds and could use them for purposes other than those contemplated at the time of this offering. Our stockholders may not agree with the manner in which our management chooses to allocate and spend the net proceeds and our management could spend the net proceeds in ways that do not necessarily improve our operating results or enhance the value of our common stock.

You will experience immediate dilution in the book value per share of the common stock you purchase.

Because the price per share of our common stock being offered is substantially higher than the book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. After giving effect to the sale by us of 5,000,000 shares of common stock in this offering, and based on an assumed public offering price of $7.55 per share in this offering and a net tangible book value per share of our common stock of $0.74 as of March 31, 2009, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of $6.24 per share in the net tangible book value of the common stock. If the underwriters exercise their over-allotment option, you will experience additional dilution. See "Dilution" on page S-21 for a more detailed discussion of the dilution you will incur in connection with this offering.

Table of Contents

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements relate to future events and our future financial performance.

These forward-looking statements are identified by their use of terms and phrases, such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "predict," "project," "will" and other similar terms and phrases, including references to assumptions. These statements are contained in the "Risk Factors" section, as well as other sections of this prospectus supplement.

Forward-looking statements in this prospectus supplement include, but are not limited to:

- our and our collaborators' expectations regarding clinical trials, development timelines and regulatory filings for T-DM1, IMGN901, SAR3419, IMGN388 and other drug candidates under development by us and our collaborators;
- the expectation that the Phase II trial of T-DM1 could be used to gain accelerated approval of T-DM1 in the United States if the findings are compelling;
- Genentech's expectation that the final data from its Phase II trial of T-DM1 to be available in the first quarter of 2010;
- the expectation that T-DM1 could be evaluated in the adjuvant setting to treat early HER2+BC;
- our plan to initiate a trial later this year to evaluate IMGN901 used in combination with an approved treatment regimen for multiple myeloma;
- our expectation that the first clinical findings with SAR3419 and IMGN388 will be reported in the fourth quarter of 2009;
- our expectation that our TAP technology potentially may be used with antibodies with limited or no anticancer activity of their own, enabling effective antibody-based therapies to be developed for many more types of cancers;
- our belief that our current working capital, not including the net proceeds of this offering, and future payments, if any, from our collaboration arrangements will be sufficient to meet our current and projected operating and capital requirements for fiscal year 2010 and at least a portion of the following fiscal year;
- our expectation of the amount and timing of future revenues, expenses, investments and other items affecting the results of our operations; and
- our expected uses of the net proceeds of this offering.

These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from those contemplated by our forward- looking statements. These known and unknown risks, uncertainties and other factors are described in detail in the "Risk Factors" section and in other sections of this prospectus supplement and our Annual Report on Form 10-K for the fiscal year ended June 30, 2008 and our subsequent Quarterly Reports on Form 10-Q. We disclaim any intention or obligation

to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Table of Contents

USE OF PROCEEDS

We expect to receive net proceeds of approximately $35.6 million from the sale of 5,000,000 shares of our common stock in this offering, or $41.0 million if the underwriters exercise their over-allotment option in full, based on an assumed public offering price of $7.55 per share, after deducting the underwriting discounts and commissions and expenses related to this offering payable by us.

We intend to use the net proceeds of this offering for our operations, including, but not limited to, general corporate purposes, which may include research and development expenditures, clinical trial expenditures, manufacture of the components of product candidates in development and of the product candidates themselves, acquisitions of new technologies, capital expenditures, investments and working capital.

We have not determined the amounts we plan to spend on any of the areas listed above or the timing of these expenditures. As a result, our management will have broad discretion to allocate the net proceeds from this offering. We have no current plans, commitments or agreements with respect to any acquisitions and may not make any acquisitions. Pending application of the net proceeds as described above, we intend to invest the net proceeds of the offering in short-term, investment-grade, interest-bearing securities.

Until we use the net proceeds of this offering, we intend to invest the funds in short-term, investment grade, interest-bearing securities.

Table of Contents

DILUTION

If you purchase our common stock in this offering, your interest will be diluted to the extent of the difference between the public offering price per share and the net tangible book value per share of our common stock after this offering. We calculate net tangible book value per share by subtracting our total liabilities from our total tangible assets and dividing the difference by the number of outstanding shares of our common stock. Total tangible assets excludes deferred debt costs included in other assets on our condensed consolidated balance sheets at March 31, 2009.

Our net tangible book value at March 31, 2009 was $38.0 million, or $0.74 per share, based on 51.1 million shares of our common stock outstanding. After giving effect to the sale of 5,000,000 shares of common stock by us at an assumed public offering price of $7.55 per share, less our estimated underwriting discounts and commissions and offering expenses, our net tangible book value at March 31, 2009 would be $73.6 million, or $1.31 per share. This represents an immediate increase in net tangible book value of $0.57 per share to existing stockholders and an immediate dilution of $6.24 per share to the investor in this offering. The following table illustrates this per share dilution:

Assumed public offering price per share		$7.55
Net tangible book value per share as of March 31, 2009	$0.74	
Increase per share attributable to this offering	$0.57	
Net tangible book value per share after this offering		$1.31
Dilution per share to the new investor		$6.24

If the underwriters exercise their over-allotment option in full, the as adjusted net tangible book value would increase to approximately $1.39 per share, representing an increase to existing stockholders of approximately $0.65 per share, and there would be an immediate dilution of approximately $6.16 per share to new investors.

Table of Contents

UNDERWRITING

We have entered into an underwriting agreement with Oppenheimer & Co. Inc. and acting as representative of the underwriters.

The underwriting agreement provides for the purchase of a specific number of shares of common stock by each of the underwriters. The underwriters' obligations are several, which means that each underwriter is required to purchase a specified number of shares, but is not responsible for the commitment of any other underwriter to purchase shares. Subject to the terms and conditions of the underwriting agreement each underwriter has severally agreed to purchase the number of shares of common stock set forth opposite its name below:

Underwriter	Number of Shares
Oppenheimer & Co. Inc.	
Morgan Joseph & Co. Inc.	
Total	5,000,000

The underwriters have agreed to purchase all of the shares offered by this prospectus supplement (other than those covered by the over-allotment option described below) if any are purchased. Under the underwriting agreement, if an underwriter defaults in its commitment to purchase shares, the commitments of non-defaulting underwriters may be increased or the underwriting agreement may be terminated, depending on the circumstances.

The shares should be ready for delivery on or about June , 2009 against payment in immediately available funds. The underwriters are offering the shares subject to various conditions and may reject all or part of any order. The representatives have advised us that the underwriters propose to offer the shares directly to the public at the public offering price that appears on the cover page of this prospectus supplement. In addition, the representatives may offer some of the shares to other securities dealers at such price less a concession of $ per share. The underwriters may also allow, and such dealers may reallow, a concession not in excess of $ per share to other dealers. After the shares are released for sale to the public, the representatives may change the offering price and other selling terms at various times.

We have granted the underwriters an over-allotment option. This option, which is exercisable for up to 30 days after the date of this prospectus supplement, permits the underwriters to purchase a maximum of 750,000 additional shares from us to cover over-allotments. If the underwriters exercise all or part of this option, they will purchase shares covered by the option at the public offering price that appears on the cover page of this prospectus supplement, less the underwriting discount. If this option is exercised in full, the total price to public will be $ and the total proceeds to us will be $. The underwriters have severally agreed that, to the extent the over-allotment option is exercised, they will each purchase a number of additional shares proportionate to the underwriter's initial amount reflected in the foregoing table.

The following table provides information regarding the amount of the discount to be paid to the underwriters by us:

	Per Share	Total Without Exercise of Over-Allotment Option	Total With Full Exercise of Over-Allotment Option
ImmunoGen, Inc.	$	$	$

We estimate that our total expenses of the offering, excluding the underwriting discount, will be approximately $250,000.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933.

Table of Contents

We and our officers and directors have agreed to a 90-day "lock up" with respect to shares of common stock that they beneficially own, including securities that are convertible into shares of common stock and securities that are exchangeable or exercisable for shares of common stock. This means that, subject to certain exceptions, for a period of 90 days following the date of this prospectus, we and such persons may not offer, sell, pledge or otherwise dispose of these securities without the prior written consent of Oppenheimer & Co. Inc.

Rules of the Securities and Exchange Commission may limit the ability of the underwriters to bid for or purchase shares before the distribution of the shares is completed. However, the underwriters may engage in the following activities in accordance with the rules:

Stabilizing transactions The representatives may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.

Over-allotments and syndicate covering transactions The underwriters may sell more shares of our common stock in connection with this offering than the number of shares than they have committed to purchase. This over-allotment creates a short position for the underwriters. This short sales position may involve either "covered" short sales or "naked" short sales. Covered short sales are short sales made in an amount not greater than the underwriters' over-allotment option to purchase additional shares in this offering described above. The underwriters may close out any covered short position either by exercising their over-allotment option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market, as compared to the price at which they may purchase shares through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the shares that could adversely affect investors who purchase shares in this offering.

Penalty bids If the representatives purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from the underwriters and selling group members who sold those shares as part of this offering.

Passive market making Market makers in the shares who are underwriters or prospective underwriters may make bids for or purchases of shares, subject to limitations, until the time, if ever, at which a stabilizing bid is made.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our common stock or preventing or mitigating a decline in the market price of our common stock. As a result, the price of the shares of our common stock may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of the shares if it discourages resales of the shares.

Neither we nor the underwriters makes any representation or prediction as to the effect that the transactions described above may have on the price of the shares. These transactions may occur on the Nasdaq Global Market or otherwise. If such transactions are commenced, they may be discontinued without notice at any time.

Electronic Delivery of Preliminary Prospectus Supplement: A prospectus supplement in electronic format may be delivered to potential investors by one or more of the underwriters participating in this offering. The prospectus supplement in electronic format will be identical to the paper version of such preliminary prospectus supplement. Other than the prospectus supplement in electronic format, the information on any underwriter's web site and any information contained in any other web site

Table of Contents

maintained by an underwriter is not part of the prospectus supplement or the registration statement of which this prospectus supplement forms a part.

Notice to Non-US Investors

The offering is exclusively conducted under applicable private placement exemptions and therefore it has not been and will not be notified to, and this document or any other offering material relating to the shares has not been and will not be approved by, the Belgian Banking, Finance and Insurance Commission ("Commission bancaire, financière et des assurances/Commissie voor het Bank-, Financie- en Assurantiewezen"). Any representation to the contrary is unlawful.

Each underwriter has undertaken not to offer sell, resell, transfer or deliver directly or indirectly, any shares, or to take any steps relating/ancillary thereto, and not to distribute or publish this document or any other material relating to the shares or to the offering in a manner which would be construed as: (a) a public offering under the Belgian Royal Decree of 7 July 1999 on the public character of financial transactions; or (b) an offering of shares to the public under Directive 2003/71/EC which triggers an obligation to publish a prospectus in Belgium. Any action contrary to these restrictions will cause the recipient and the issuer to be in violation of the Belgian securities laws.

No regulatory consent or approval has been sought in respect of the offering in Jersey and it must be distinctly understood that the Jersey Financial Services Commission is not responsible for the financial soundness of the issuer or the correctness of any statements made or opinions expressed in connection with the issuer. The offer of shares is personal to the person to whom this prospectus supplement is being delivered, and an application for the shares will only be accepted from such person. This prospectus supplement is being issued to persons in Jersey in reliance on the Financial Services (Investment Business (Overseas Persons Exemption)) (Jersey) Order 2001 and accordingly the provisions of the Financial Services (Jersey) Law 1998 do not apply to Oppenheimer & Co. Inc. or any other persons who, in connection with this offer, are dealing with or carrying on other specified investment business with persons in Jersey.

This prospectus supplement relates to a private placement and does not constitute an offer to the public in Guernsey to subscribe for the shares offered hereby. No regulatory consent or approval has been sought in respect of the offering in Guernsey and it must be distinctly understood that the Guernsey Financial Services Commission is not responsible for the financial soundness of the issuer or the correctness of any statements made or opinions expressed in connection with the issuer. The offer of shares is personal to the person to whom this prospectus supplement is being delivered, and an application for the shares will only be accepted from such person. The offering is only being promoted in or from within Guernsey to persons licensed under the Protection of Investors (Bailiwick of Guernsey) Law, 1987 (as amended), the Insurance Business (Guernsey) Law, 1986 (as amended), the Banking Supervision (Bailiwick of Guernsey) Law, 1994 or the Regulation of Fiduciaries, Administration Businesses and Company Directors, etc. (Bailiwick of Guernsey) Law, 2000.

Neither this prospectus supplement nor any other offering material relating to the shares has been submitted to the clearance procedures of the *Autorité des marchés financiers* in France. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the shares has been or will be: (a) released, issued, distributed or caused to be released, issued or distributed to the public in France; or (b) used in connection with any offer for subscription or sale of the shares to the public in France. Such offers, sales and distributions will be made in France only: (i) to qualified investors (*investisseurs qualifiés*) and/or to a restricted circle of investors (*cercle restreint d'investisseurs*), in each case investing for their own account, all as defined in and in accordance with Articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French *Code monétaire et financier*; (ii) to investment services providers authorised to engage in portfolio management on behalf of third parties; or (iii) in a transaction that, in accordance with article L.411-2-II-1°-or-2°-or 3° of the French *Code monétaire et financier* and article 211-2 of the General Regulations (*Règlement Général*) of the

Table of Contents

Autorité des marchés financiers, does not constitute a public offer (*appel public à l'épargne*). Such shares may be resold only in compliance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French *Code monétaire et financier*.

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares which are the subject of the offering contemplated by this prospectus supplement may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

(a) to legal entities which are authorised or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;

(b) to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than €43,000,000 and (3) an annual net turnover of more than €50,000,000, as shown in its last annual or consolidated accounts;

(c) by the underwriters to fewer than 100 natural or legal persons (other than qualified investors as defined in the Prospectus Directive) subject to obtaining the prior consent of the lead underwriter for any such offer; or

(d) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares shall result in a requirement for the publication by the issuer or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase any shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Each underwriter has represented, warranted and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000 (the "FSMA")) received by it in connection with the issue or sale of any shares in circumstances in which section 21(1) of the FSMA does not apply to the issuer; and

(b) it has complied with and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares in, from or otherwise involving the United Kingdom.

In the State of Israel, the shares offered hereby may not be offered to any person or entity other than the following:

(a) a fund for joint investments in trust (i.e., mutual fund), as such term is defined in the Law for Joint Investments in Trust, 5754-1994, or a management company of such a fund;

(b) a provident fund as defined in Section 47(a)(2) of the Income Tax Ordinance of the State of Israel, or a management company of such a fund;

(c) an insurer, as defined in the Law for Oversight of Insurance Transactions, 5741-1981, (d) a banking entity or satellite entity, as such terms are defined in the Banking Law (Licensing), 5741-1981, other than a joint services company, acting for their own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

Table of Contents

(d) a company that is licensed as a portfolio manager, as such term is defined in Section 8(b) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

(e) a company that is licensed as an investment advisor, as such term is defined in Section 7(c) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account;

(f) a company that is a member of the Tel Aviv Stock Exchange, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

(g) an underwriter fulfilling the conditions of Section 56(c) of the Securities Law, 5728-1968;

(h) a venture capital fund (defined as an entity primarily involved in investments in companies which, at the time of investment, (i) are primarily engaged in research and development or manufacture of new technological products or processes and (ii) involve above-average risk);

(i) an entity primarily engaged in capital markets activities in which all of the equity owners meet one or more of the above criteria; and

(j) an entity, other than an entity formed for the purpose of purchasing shares in this offering, in which the shareholders equity (including pursuant to foreign accounting rules, international accounting regulations and U.S. generally accepted accounting rules, as defined in the Securities Law Regulations (Preparation of Annual Financial Statements), 1993) is in excess of NIS 250 million.

Any offeree of the shares offered hereby in the State of Israel shall be required to submit written confirmation that it falls within the scope of one of the above criteria. This prospectus supplement will not be distributed or directed to investors in the State of Israel who do not fall within one of the above criteria.

The offering of the shares offered hereby in Italy has not been registered with the Commissione Nazionale per la Società e la Borsa ("CONSOB") pursuant to Italian securities legislation and, accordingly, the shares offered hereby cannot be offered, sold or delivered in the Republic of Italy ("Italy") nor may any copy of this prospectus supplement or any other document relating to the shares offered hereby be distributed in Italy other than to professional investors (*operatori qualificati*) as defined in Article 31, second paragraph, of CONSOB Regulation No. 11522 of 1 July, 1998 as subsequently amended. Any offer, sale or delivery of the shares offered hereby or distribution of copies of this prospectus supplement or any other document relating to the shares offered hereby in Italy must be made:

(a) by an investment firm, bank or intermediary permitted to conduct such activities in Italy in accordance with Legislative Decree No. 58 of 24 February 1998 and Legislative Decree No. 385 of 1 September 1993 (the "Banking Act");

(b) in compliance with Article 129 of the Banking Act and the implementing guidelines of the Bank of Italy; and

(c) in compliance with any other applicable laws and regulations and other possible requirements or limitations which may be imposed by Italian authorities.

This prospectus supplement has not been nor will it be registered with or approved by Finansinspektionen (the Swedish Financial Supervisory Authority). Accordingly, this prospectus supplement may not be made available, nor may the shares offered hereunder be marketed and offered for sale in Sweden, other than under circumstances which are deemed not to require a prospectus under the Financial Instruments Trading Act (1991: 980). This offering will be made to no more than 100 persons or entities in Sweden.

Table of Contents

The shares offered pursuant to this prospectus supplement will not be offered, directly or indirectly, to the public in Switzerland and this prospectus supplement does not constitute a public offering prospectus as that term is understood pursuant to art. 652a or art. 1156 of the Swiss Federal Code of Obligations. The issuer has not applied for a listing of the shares being offered pursuant to this prospectus supplement on the SWX Swiss Exchange or on any other regulated securities market, and consequently, the information presented in this prospectus supplement does not necessarily comply with the information standards set out in the relevant listing rules. The shares being offered pursuant to this prospectus supplement have not been registered with the Swiss Federal Banking Commission as foreign investment funds, and the investor protection afforded to acquirers of investment fund certificates does not extend to acquirers of shares.

Investors are advised to contact their legal, financial or tax advisers to obtain an independent assessment of the financial and tax consequences of an investment in shares.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts. Latham & Watkins LLP, San Diego, California, will act as counsel to the underwriters.

EXPERTS

The consolidated financial statements and schedule of ImmunoGen, Inc. appearing in ImmunoGen, Inc.'s Annual Report (Form 10-K) for the year ended June 30, 2008 and of the effectiveness of ImmunoGen, Inc.'s internal control over financial reporting as of June 30, 2008, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements and schedule are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, and file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference facilities at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference facilities. SEC filings are also available at the SEC's web site at *http://www.sec.gov*.

This prospectus supplement and the accompanying prospectus are only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act of 1933, as amended, and therefore omit certain information contained in the registration statement. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus supplement, and you should refer to the applicable exhibit or schedule for a complete description of any statement referring to any contract or other document. You may inspect a copy of the registration statement, including the exhibits and schedules, without charge, at the public reference room or obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

We also maintain a web site at *www.immunogen.com* through which you can access our SEC filings. The information set forth on our web site is not part of this prospectus supplement.

Table of Contents

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with them, which means that we can disclose important information in this prospectus supplement by referring to those documents. The information incorporated by reference is considered to be part of this prospectus supplement, and information that we file later with the SEC will automatically update and supersede the information in this prospectus supplement. We incorporate by reference the following documents (unless otherwise noted, the SEC file number for each of the documents listed below is 000-17999):

our Annual Report on Form 10-K, for the fiscal year ended June 30, 2008, filed with the SEC on September 2, 2008;

our Quarterly Report on Form 10-Q, for the quarterly period ended September 30, 2008, filed with the SEC on October 31, 2008;

our Quarterly Report on Form 10-Q, for the quarterly period ended December 31, 2008, filed with the SEC on February 6, 2009;

our Quarterly Report on Form 10-Q, for the quarterly period ended March 31, 2009, filed with the SEC on May 7, 2009;

our Current Report on Form 8-K filed with the SEC on July 31, 2008;

our Current Report on Form 8-K filed with the SEC on August 1, 2008;

our Current Report on Form 8-K filed with the SEC on September 30, 2008;

our Current Report on Form 8-K filed with the SEC on November 4, 2008;

our Current Report on Form 8-K filed with the SEC on November 14, 2008;

our Current Report on Form 8-K filed with the SEC on December 3, 2008;

our Current Report on Form 8-K filed with the SEC on January 5, 2009;

our Current Report on Form 8-K filed with the SEC on January 12, 2009;

our Current Report on Form 8-K filed with the SEC on June 12, 2009;

the description of our capital stock contained in our registration statement on Form 8-A, filed on September 25, 1989, as amended by Amendment No. 1 thereto, filed on November 15, 1989, under the Securities Exchange Act of 1934, as amended, including amendments or reports filed for the purpose of updating such description;

the portions of our Definitive Proxy Statement on Schedule 14A that are deemed "filed" with the SEC under the Securities Exchange Act of 1934, as amended, filed on October 1, 2008; and

all reports and other documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended, after the date of this prospectus supplement and prior to the termination of this offering shall be deemed to be incorporated by reference in this prospectus supplement and to be a part hereof from the date of filing such reports and other documents.

We will provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus supplement is delivered, upon the request of any such person, a copy of any or all of the information incorporated herein by reference (exclusive of exhibits to such documents unless such exhibits are specifically incorporated by reference herein). Requests, whether written or oral, for such copies should be directed to ImmunoGen, Inc., Attention: Investor Relations, 830 Winter Street, Waltham, Massachusetts 02451, (781) 895-0600.

Table of Contents

PROSPECTUS

$75,000,000

COMMON STOCK

This prospectus will allow us to issue up to $75,000,000 of our common stock from time to time at prices and on terms to be determined at or prior to the time of the offering. We will provide you with specific terms of any offering in one or more supplements to this prospectus. You should read this document and any prospectus supplement carefully before you invest.

Our common stock is listed on the Nasdaq Global Market under the symbol "IMGN." On July 10, 2007, the last reported sale price of our common stock was $5.72 per share. Prospective purchasers of common stock are urged to obtain current information as to the market prices of our common stock.

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks that we have described on page 2 of this prospectus under the caption "Risk Factors." We may include specific risk factors in supplements to this prospectus under the caption "Risk Factors." This prospectus may not be used to offer or sell our common stock unless accompanied by a prospectus supplement.

Our common stock may be sold directly by us to investors, through agents designated from time to time or to or through underwriters or dealers. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any underwriters are involved in the sale of our common stock with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts and over-allotment options will be set forth in a prospectus supplement. The price to the public of such common stock and the net proceeds that we expect to receive from such sale will also be set forth in a prospectus supplement.

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

The date of this prospectus is August 13, 2007.

Table of Contents

TABLE OF CONTENTS

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, utilizing a "shelf" registration process. Under this shelf registration process, we may sell shares of our common stock, with a total value of up to $75,000,000, in one or more offerings. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering.

This prospectus does not contain all of the information included in the registration statement. For a more complete understanding of the offering of the securities, you should refer to the registration statement, including its exhibits. The prospectus supplement may also add, update or change information contained or incorporated by reference in this prospectus. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness. This prospectus, together with the applicable prospectus supplements and the documents incorporated by reference into this prospectus, includes all material information relating to this offering. You should carefully read this prospectus, the applicable prospectus supplement, the information and documents incorporated herein by reference and the additional information under the heading "Where You Can Find More Information" before making an investment decision.

You should rely only on the information we have provided or incorporated by reference in this prospectus or any prospectus supplement. We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained or incorporated by reference in this prospectus. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus or any prospectus supplement is accurate only as of the date on the front of the document and that any information we have incorporated herein by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of a security.

This prospectus may not be used to consummate sales of common stock, unless it is accompanied by a prospectus supplement. To the extent there are inconsistencies between any prospectus supplement, this prospectus and any documents incorporated by reference, the document with the most recent date will control.

Unless the context otherwise requires, "ImmunoGen," "the Company," "we," "us," "our" and similar names refer to ImmunoGen, Inc. and our subsidiaries.

IMMUNOGEN, INC.

We develop novel, targeted therapeutics for the treatment of cancer using our expertise in cancer biology, monoclonal antibodies ("antibodies") and small molecule cell-killing, or cytotoxic, agents. Our Tumor-Activated Prodrug, or TAP, technology uses antibodies to deliver a potent cytotoxic agent specifically to cancer cells. Our TAP technology is designed to enable the creation of highly effective, well-tolerated anticancer products.

We believe that our TAP technology and our expertise in antibodies will enable us to become a leader in the application of antibodies for the treatment of cancer. We plan to achieve this goal through the development of our own anticancer products and through outlicenses of our TAP technology to other companies. We currently have two TAP product candidates for which we own the rights to develop and commercialize: huN901-DM1 and huC242-DM4. HuN901-DM1 targets cancers that express the CD56 antigen, which include small-cell lung cancer, other cancers of neuroendocrine

Table of Contents

origin, and many cases of multiple myeloma as well as other hematological malignancies. This compound is in Phase I clinical testing for multiple myeloma and PhaseI/II clinical testing for small-cell lung cancer and other CD56 positive solid tumors. HuC242-DM4 targets cancers that express the CanAg antigen, which include gastric, colorectal, pancreatic, and other gastrointestinal cancers as well as many non-small cell lung cancers. This compound is being evaluated in a Phase I safety trial and we expect to initiate a Phase II clinical trial of this compound for the treatment of gastric cancer. Our outlicenses are designed to expand the number of anticancer therapeutics developed that can provide us a financial return by enabling the creation of TAP compounds with antibodies proprietary to other companies and therefore not available for our own product programs. Currently, two TAP compounds from these collaborations, AVE9633 and trastuzumab-DM1, are in clinical trials. AVE9633 is in Phase I clinical testing by sanofi-aventis for the treatment of acute myeloid leukemia and trastuzumab-DM1 is in Phase I clinical testing by Genentech for the treatment of HER2-expressing metastatic breast cancer. Genentech has indicated that they intend to initiate a Phase II clinical trial with this compound. A third collaborator compound, AVE 1642, is a naked antibody in Phase I clinical testing by sanofi-aventis. This antibody targets the insulin-like growth factor 1 receptor or IGF-1R, which is an important survival pathway for many cancer-cell types. Our collaborative partners include: Amgen Inc. (formerly Abgenix, Inc.); Biogen Idec, Inc.; Biotest AG; Centocor, Inc. (a wholly owned subsidiary of Johnson & Johnson); Genentech, Inc.; and the sanofi-aventis Group. We also have a broader collaboration with sanofi-aventis.

We were organized as a Massachusetts corporation in March 1981. Our principal offices are located at 128 Sidney Street, Cambridge, Massachusetts 02139, and our telephone number is (617) 995-2500. We maintain a web site at *www.immunogen.com*, where certain information about us is available. Please note that the information contained on the website is not a part of this document.

ImmunoGen is a trademark of ImmunoGen, Inc. Each of the other trademarks, trade names or service marks appearing in this prospectus belongs to its respective holder.

Our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and all amendments to such reports are made available free of charge through the Investor Information section of our website as soon as reasonably practicable after they have been filed or furnished with the SEC. We have adopted a Code of Corporate Conduct that applies to all our directors, officers and employees and a Code of Ethics that applies to our senior officers and financial personnel. Our Code of Corporate Conduct and Senior Officer and Financial Personnel Code of Ethics are available free of charge through the Investor Information section of our website.

RISK FACTORS

Investing in our common stock involves risk. The prospectus supplement applicable to each offering of our common stock will contain a discussion of the risks applicable to an investment in us. Prior to making a decision about investing in our common stock, you should carefully consider the specific factors discussed under the heading "Risk Factors" in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under the heading "Risk Factors" included in our most recent annual report on Form 10-K, which is on file with the SEC and is incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future.

Table of Contents

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents we have filed with the SEC that are incorporated herein by reference contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements involve known and unknown risks, uncertainties and other important factors which 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, but are not limited to, statements about:

- successfully finding and managing the relationships with collaborative partners;
- the uncertainty as to whether our TAP compounds or those of our collaborators will succeed in entering human clinical trials and uncertainty as to the results of such trials;
- the risk that we and/or our collaborators may not be able to obtain regulatory approvals necessary to commercialize product candidates;
- the potential development by competitors of competing products and technologies;
- uncertainty whether our TAP technology will produce safe, effective and commercially viable products;
- our ability to successfully protect our intellectual property;
- our reliance on third-party manufacturers to achieve supplies of our cell-killing agents;
- the risk that we may be unable to establish the manufacturing capabilities necessary to develop and commercialize our potential products;
- the adequacy of our liquidity and capital resources and our intended use of the proceeds of this offering, if any;
- governmental regulation of our activities, facilities, products and personnel;
- the dependence on key personnel;
- uncertainties as to the extent of reimbursement for the costs of our potential products and related treatments by government and private health insurers and other organizations;
- the potential adverse impact of government-directed health care reform;
- the risk of product liability claims; and

economic conditions, both generally and those specifically related to the biotechnology industry.

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," "would" and similar expressions intended to identify forward-looking statements. Forward-looking statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Because of these risks and uncertainties, the forward-looking events and circumstances discussed in this prospectus may not transpire.

Given these uncertainties, you should not place undue reliance on these forward-looking statements. You should read this document, any supplements to this document and the documents that we reference in this prospectus with the understanding that our actual future results may be materially different from what we expect. Except as required by law, we do not undertake any obligation to update or revise any forward-looking statements contained in this prospectus and any supplements to this prospectus, whether as a result of new information, future events or otherwise.

Table of Contents

USE OF PROCEEDS

We cannot assure you that we will receive any proceeds in connection with shares of common stock offered pursuant to this prospectus and the prospectus supplement applicable to a particular offering. Unless otherwise indicated in the applicable prospectus supplement, we intend to use any net proceeds from the sale of our common stock for our operations and for other general corporate purposes, including, but not limited to, working capital, development of our clinical and preclinical product candidates, intellectual property protection and enforcement, capital expenditures, investments and acquisitions. Pending use of the net proceeds as described above, we intend to invest the net proceeds in accordance with our investment policy guidelines, which currently provide for investment of funds in cash equivalents, short-term high-quality highly liquid investment funds, United States government obligations, high grade and corporate notes and commercial paper.

PLAN OF DISTRIBUTION

We may offer the common stock from time to time pursuant to underwritten public offerings, negotiated transactions, block trades or a combination of these methods. We may sell the common stock (1) through underwriters or dealers, (2) through agents or (3) directly to one or more purchasers, or through a combination of such methods. We may distribute the common stock from time to time in one or more transactions at:

- a fixed price or prices, which may be changed;
- market prices prevailing at the time of sale;
- prices related to the prevailing market prices; or
- negotiated prices.

A prospectus supplement will describe the terms of the offering of our common stock, including:

- the number of shares of common stock we are offering;
- the name or names of any underwriters;
- any securities exchange or market on which the common stock may be listed;
- the purchase price or other consideration to be paid in connection with the sale of our common stock being offered and the proceeds we will receive from the sale;
- any over-allotment options pursuant to which the underwriters may purchase additional shares of common stock from us;
- any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation; and
- any discounts or concessions allowed or reallowed or paid to dealers.

We may directly solicit offers to purchase the common stock. We may also designate agents to solicit offers to purchase the common stock from time to time. We will name in a prospectus supplement any agent involved in the offer or sale of our common stock. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

If we utilize a dealer in the sale of the common stock being offered by this prospectus, we will sell the common stock to the dealer, as principal. The dealer may then resell the common stock to the public at varying prices to be determined by the dealer at the time of resale.

If we utilize an underwriter in the sale of the common stock being offered, we will execute an underwriting agreement with the underwriter at the time of sale. In connection with the sale of the

Table of Contents

common stock, we, or the purchasers of our common stock for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the common stock to or through dealers, and the underwriter may compensate those dealers in the form of discounts, concessions or commissions. Subject to certain conditions, the underwriters will be obligated to purchase all of the shares of common stock offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallowed or paid to dealers.

Underwriters, dealers and agents participating in the distribution of the common stock may be deemed to be underwriters within the meaning of the Securities Act of 1933, as amended, and any discounts and commissions received by them and any profit realized by them on resale of the common stock may be deemed to be underwriting discounts and commissions. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act of 1933, as amended, or to contribute to payments they may be required to make in respect thereof.

Shares of our common stock sold pursuant to the registration statement of which this prospectus is a part will be authorized for quotation and trading on the Nasdaq Global Market. One or more underwriters may make a market in our common stock, but the underwriters will not be obligated to do so and may discontinue market making at any time without notice. We cannot give any assurance as to liquidity of the trading market for our common stock.

To facilitate the offering of the common stock, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of our common stock. This may include over-allotments or short sales of the common stock, which involve the sale by persons participating in the offering of more shares of common stock than we sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option. In addition, these persons may stabilize or maintain the price of the common stock by bidding for or purchasing the common stock in the open market or by imposing penalty bids, whereby selling concessions allowed to underwriters or dealers participating in the offering may be reclaimed if the shares of common stock sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of our common stock at a level above that which might otherwise prevail in the open market. These transactions, if commenced, may be discontinued at any time.

Any underwriters who are qualified market makers on the Nasdaq Global Market may engage in passive market making transactions in the common stock on the Nasdaq Global Market in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the National Association of Securities Dealers, or NASD, the maximum consideration or discount to be received by any NASD member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

The underwriters, dealers and agents may engage in other transactions with us, or perform other services for us, in the ordinary course of their business. We will describe such relationships in the prospectus supplement naming the underwriter and the nature of any such relationship.

Table of Contents

LEGAL MATTERS

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts, will pass upon the validity of the issuance of the common stock offered by this prospectus.

EXPERTS

The consolidated financial statements and schedule of ImmunoGen, Inc. appearing in ImmunoGen, Inc.'s Annual Report (Form 10-K) for the year ended June 30, 2006 and ImmunoGen Inc. management's assessment of the effectiveness of internal control over financial reporting as of June 30, 2006 included therein, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements, schedule, and management's assessment are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, and file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference facilities at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference facilities. SEC filings are also available at the SEC's web site at *http://www.sec.gov*. Our common stock is listed on the Nasdaq Global Market, and you can read and inspect our filings at the offices of the National Association of Securities Dealers, Inc. at 1735 K Street, Washington, D.C. 20006.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act of 1933, as amended, and therefore omits certain information contained in the registration statement. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus, and you should refer to the applicable exhibit or schedule for a complete description of any statement referring to any contract or other document. You may inspect a copy of the registration statement, including the exhibits and schedules, without charge, at the public reference room or obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

We also maintain a web site at *www.immunogen.com*, through which you can access our SEC filings. The information set forth on our web site is not part of this prospectus.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with them, which means that we can disclose important information in this prospectus by referring to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, after the date of this prospectus and prior to the termination or completion of any offering of securities under this prospectus and accompanying prospectus supplements:

- our annual report on Form 10-K for the fiscal year ended June 30, 2006, filed on August 28, 2006, as amended by Amendment No. 1 thereto, filed on September 11, 2006;

- our quarterly report on Form 10-Q for the quarter ended September 30, 2006, filed on November 3, 2006;

Table of Contents

our quarterly report on Form 10-Q for the quarter ended December 31, 2006, filed on February 8, 2007;

our quarterly report on Form 10-Q for the quarter ended March 31, 2007, filed on May 9, 2007;

our current report on Form 8-K, filed on September 5, 2006;

our current report on Form 8-K, filed on September 11, 2006;

our current report on Form 8-K, filed on October 4, 2006;

our current report on Form 8-K, filed on October 19, 2006;

our current report on Form 8-K, filed on November 8, 2006;

our current report on Form 8-K, filed on November 13, 2006;

our current report on Form 8-K, filed on November 15, 2006;

our current report on Form 8-K, filed on December 6, 2006;

our current report on Form 8-K, filed on December 11, 2006;

our current report on Form 8-K, filed on December 15, 2006;

our current report on Form 8-K, filed on December 28, 2006;

our current report on Form 8-K, filed on February 5, 2007;

our current report on Form 8-K, filed on March 9, 2007;

our current report on Form 8-K, filed on March 23, 2007;

our current report on Form 8-K, filed on April 6, 2007;

our current report on Form 8-K, filed on May 2, 2007;

our current report on Form 8-K, filed on May 4, 2007;

our current report on Form 8-K, filed on May 18, 2007;

our current report on Form 8-K, filed on June 5, 2007;

the description of our capital stock contained in our registration statement on Form 8-A, filed on September 25, 1989, as amended by Amendment No. 1 thereto, filed on November 15, 1989, under the Securities Exchange Act of 1934, as amended, including amendments or reports filed for the purpose of updating such description;

the portions of our definitive proxy statement on Schedule 14A that are deemed "filed" with the SEC under the Securities Exchange Act of 1934, as amended, filed on October 6, 2006; and

all of the filings that we make pursuant to the Securities Exchange Act of 1934, as amended, (1) after the date of the filing of the original registration statement and prior to the effectiveness of the registration statement and (2) until all of the common stock to which this prospectus relates has been sold or the offering is otherwise terminated, except in each case for information contained in any such filing where we indicate that such information is being furnished and is not considered "filed" under the Securities Exchange Act of 1934, as amended, which filings will be deemed to be incorporated by reference in this prospectus and the accompanying prospectus supplement and to be a part hereof from the date of filing of such documents.

The SEC file number for each of the documents listed above is 000-17999.

Table of Contents

We will provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon the request of any such person, a copy of any or all of the information incorporated herein by reference (exclusive of exhibits to such documents unless such exhibits are specifically incorporated by reference herein). Requests, whether written or oral, for such copies should be directed to ImmunoGen, Inc., Attention: Investor Relations, 128 Sidney Street, Cambridge, MA 02139, (617) 995-2500.

You should rely only on information contained in, or incorporated by reference into, this prospectus and any prospectus supplement. We have not authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference in this prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

Table of Contents

5,000,000 Shares

Common Stock

Oppenheimer & Co.

Sole Book-Running Manager

Morgan Joseph

Co-Manager

The date of this prospectus supplement is June , 2009