Filed pursuant to Rule 424(b)(5)
Registration No. 333-251502

SUBJECT TO COMPLETION, DATED NOVEMBER 30, 2021

PROSPECTUS SUPPLEMENT
(to Prospectus dated December 18, 2020)

$175,000,000

immunogen

Common stock

We are offering $175,000,000 of shares of our common stock. Our common stock is listed on The Nasdaq Global Select Market under the symbol "IMGN." On November 29, 2021, the last reported sale price of our common stock on The Nasdaq Global Select Market was $4.75 per share.

Investing in our common stock involves a high degree of risk. Please read "Risk Factors" beginning on page S-5 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.

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

	PER SHARE	TOTAL
Public offering price	$	$
Underwriting discounts and commissions[1]	$	$
Proceeds to ImmunoGen, before expenses	$	$

(1) See "Underwriting" beginning on page S-14 of this prospectus supplement for additional information regarding underwriting compensation.

Delivery of shares of common stock is expected to be made on or about December , 2021.

We have granted the underwriters an option for a period of 30 days to purchase up to an additional $26,250,000 of shares of our common stock at the public offering price set forth above, less underwriting discounts and commissions.

Joint Book-Running Managers

Jefferies **Cowen** **Guggenheim Securities**

Lead Manager

Canaccord Genuity

Prospectus Supplement dated December , 2021

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You should rely only on the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus, or any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the underwriters have authorized anyone to provide you with information different from that contained in this prospectus supplement, the accompanying prospectus, or any accompanying free writing prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. We and the underwriters take no responsibility for and can provide no assurance as to the reliability of any other information that others may give you. The information contained in this prospectus supplement, the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of the date of such document, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus, any such free writing prospectus, or of any sale of our common stock. Our business, financial condition, results of operations, and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering in their entirety before making an investment decision. You should read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled “Where You Can Find More Information” and “Incorporation of Documents by Reference.”

We are offering to sell, and seeking offers to buy, common stock only in jurisdictions where offers and sales are permitted. No action is being taken in any jurisdiction outside the United States to permit an offering of the common stock or possession or distribution of this prospectus supplement, the accompanying prospectus, or any free writing prospectus in that jurisdiction. Persons who come into possession of this prospectus supplement, the accompanying prospectus, or any free writing 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, the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering applicable to that jurisdiction.

ABOUT THIS PROSPECTUS SUPPLEMENT

On December 18, 2020, we filed with the Securities and Exchange Commission (SEC) a registration statement on Form S-3 (File No. 333- 251502), utilizing a shelf registration process relating to the securities described in this prospectus supplement, which registration statement was automatically effective upon filing. Under this shelf registration process, we may, from time to time, sell common stock and other securities.

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 or this prospectus supplement. The second part, the accompanying prospectus, gives more general information, some of which does not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined.

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. If any statement in the prospectus supplement, the accompanying prospectus, or a document incorporated herein or therein by reference is inconsistent with a statement in another document having a later date, then 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 prospectus supplement or 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 may have been subject to undisclosed qualifications or exceptions. Those provisions should not be deemed to be a representation, warranty, or covenant to you. Such representations, warranties, or covenants, moreover, were made as of a particular date. Accordingly, such representations, warranties, and covenants may not apply to the current state of our affairs.

This prospectus supplement, the accompanying prospectus, and the documents incorporated by reference herein and therein include trademarks, service marks, and trade names owned by us or other companies.

Our trademarks include, without limitation, our name and corporate logo. All trademarks, service marks, and trade names appearing in this prospectus supplement, the accompanying prospectus, or the documents incorporated by reference herein and therein are the property of their respective owners.

Solely for convenience, trademarks and trade names referred to in this prospectus supplement, the accompanying prospectus, and the documents incorporated by reference herein and therein may appear without the ® or TM symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

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 to similar terms are to ImmunoGen, Inc. and its subsidiaries collectively.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement or 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, our consolidated financial statements and the related notes thereto, and the other documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus, and the information included in any free writing prospectus that we have authorized for use in connection with this offering.

Company overview

We are a clinical-stage biotechnology company focused on developing the next generation of antibody-drug conjugates (ADCs) to improve outcomes for cancer patients. By generating targeted therapies with enhanced anti-tumor activity and favorable tolerability profiles, we aim to disrupt the progression of cancer and offer patients more good days. We call this our commitment to "target a better now."

An ADC with our proprietary technology comprises an antibody that binds to a target found on tumor cells and is conjugated to one of our potent anti-cancer agents as a "payload" to kill the tumor cell once the ADC has bound to its target. ADCs are an expanding approach to the treatment of cancer, with eleven approved products and the number of agents in development growing significantly in recent years.

We have established a leadership position in ADCs with a portfolio of differentiated product candidates to address both solid tumors and hematological malignancies.

Our lead program is mirvetuximab soravtansine (mirvetuximab), a first-in-class investigational ADC targeting folate receptor alpha (FRα), a cell-surface protein over-expressed in a number of epithelial tumors, including ovarian, endometrial, and non-small-cell lung cancers. Following consultation with the FDA, we initiated two trials of mirvetuximab in patients with platinum-resistant ovarian cancer whose tumors express high levels of FRα (FRα-high): SORAYA, a single-arm clinical trial that could lead to accelerated approval, pending FDA review; and MIRASOL, a randomized Phase 3 clinical trial that, if successful, could lead to full approval in this setting.

SORAYA is a single-arm study of mirvetuximab in patients with FRα-high platinum-resistant epithelial ovarian, primary peritoneal, or fallopian tube cancer and who have been treated with up to three prior regimens—at least one of which included bevacizumab. The primary endpoint for the study is confirmed objective response rate (ORR) as assessed by investigator, including complete and partial responses, and the key secondary endpoint is duration of response (DOR). ORR was also assessed by blinded independent central review (BICR). The study is designed to assess ORR as compared to a null hypothesis of a 12% ORR, based on expectations with available single agent chemotherapy from the AURELIA study in patients with platinum-resistant ovarian cancer and one to two prior lines of therapy.

SORAYA enrolled 106 patients with a median of three prior lines of therapy (range one to four; 51% had three prior lines of therapy and 48% had one to two prior lines of therapy). All patients received prior bevacizumab; 48% of patients received a prior poly ADP-ribose polymerase (PARP) inhibitor. As of the data cutoff on November 16, 2021, the median follow-up time was 8.1 months.

ORR by investigator was 32.4% (95% confidence interval (CI): 23.6%, 42.2%), including five complete responses (CRs). ORR by BICR was 31.6% (95% CI: 22.4%, 41.9%), including five CRs. Responses were observed regardless of prior PARP inhibitor or number of prior lines of therapy.

As of the November 16, 2021 cutoff date, median DOR was 5.9 months (95% CI: 5.6, 7.7). With nearly half of responders continuing on therapy, the duration of response continues to evolve and, with longer follow-up, median DOR could range from 5.7 to just above 7 months.

Mirvetuximab was observed to be well-tolerated, consistent with safety data seen in more than 700 patients treated in the broader mirvetuximab program. Treatment-related adverse events led to dose reductions in 19% of patients, dose delays in 32% of patients, and discontinuations in 7% of patients.

The most common treatment-related adverse events included blurred vision (41% all grade; 6% grade 3+), keratopathy (35% all grade; 9% grade 3+), and nausea (29% all grade; 0% grade 3+).

We plan to submit a biologics license application (BLA) to the FDA in the first quarter of 2022 for accelerated approval of mirvetuximab in second through fourth-line patients with FRα positive, platinum-resistant ovarian cancer who have been previously treated with bevacizumab. Thereafter, we plan to seek full approval on the basis of the Phase 3 MIRASOL trial, if the primary endpoint in MIRASOL is met.

Beyond FRα-high, platinum-resistant ovarian cancer in patients who had one or more prior lines of therapy, our strategy is to move mirvetuximab into earlier lines of ovarian cancer therapy. To this end, we are supporting investigator-sponsored trials of mirvetuximab in combination with carboplatin in a single-arm study in the neoadjuvant setting and in a randomized study comparing mirvetuximab combined with carboplatin to standard of care in patients with recurrent platinum-sensitive disease. We also initiated PICCOLO, a single-arm study of mirvetuximab monotherapy in later-line platinum-sensitive patients. In addition, we presented mature data from our Phase 1b FORWARD II trial of mirvetuximab plus Avastin® (bevacizumab) in recurrent ovarian cancer in an oral presentation at the American Society for Clinical Oncology Annual Meeting in June 2021. The combination demonstrated a 64% ORR, 11.8 month median DOR, and 10.6 month median progression free survival. Most AEs were low grade and the most common treatment related adverse events were gastrointestinal or ocular issues. We believe the combination of mirvetuximab plus bevacizumab has compelling activity in patients with high FRα recurrent ovarian cancer.

IMGN632 is an ADC comprised of a high-affinity antibody designed to target CD123 with site-specific conjugation to a DNA-alkylating payload of the novel IGN (indolinobenzodiazepine pseudodimer) class. Our IGNs are designed to alkylate DNA without cross-linking, which has provided a broad therapeutic index in preclinical models. We are advancing IMGN632 in clinical trials for patients with blastic plasmacytoid dendritic cell neoplasm (BPDCN) and acute myeloid leukemia (AML). BPDCN is a rare form of blood cancer, with an annual incidence of between 500 and 1000 patients in the US. In October 2020, the FDA granted Breakthrough Therapy designation for IMGN632 for the treatment of patients with relapsed or refractory BPDCN. Based on feedback from the FDA, we have amended our ongoing 801 Phase 2 study, known as CADENZA, to add a new cohort of up to 20 frontline patients. Due to the impact of the pandemic and the challenge of enrolling patients in the ultra-rare BPDCN patient population, accrual has been slower than anticipated. We now expect to generate top-line data for this frontline cohort in the second half of 2022. At the upcoming American Society of Hematology Annual Meeting (ASH), we will present an abstract on three frontline patients who were enrolled in Study 801 prior to opening of the pivotal frontline cohort; all three of these patients achieved clinical complete response (CRc).

Our 802 study, which is a Phase 1b/2 study designed to determine the safety, tolerability, and preliminary antileukemia activity of IMGN632 when administered in combination with azacytidine (AZA) and/or venetoclax (VEN) to patients with relapsed and frontline CD123-positive AML, is in the dose-escalation phase, enrolling relapsed and refractory patients to determine the recommended Phase 2 dose of IMGN632 for combination regimens. In the ASH abstract published in November 2021, responses were seen across all cohorts/doses and schedules (efficacy evaluable population, n=29). Higher intensity cohorts (n=20) were associated with higher response rates, including an ORR of 75% and a composite complete remission (CCR) rate of 40%. Significant activity was also observed in the FLT3 mutant subset (n=7), with ORR and CCR rates of 100% and 71%, respectively. The toxicity profile was manageable in this R/R AML population with multiple prior therapies. The most common treatment emergent adverse events all grades seen in >20% of patients were infusion-related reactions, febrile neutropenia, hypophosphatemia, dyspnea, pneumonia, and fatigue. One patient discontinued IMGN632 due to an infusion-related reaction. Cytopenias and infections were consistent with those observed with the AZA+VEN regimen in this relapsed/refractory population. No tumor lysis syndrome, veno-occlusive disease, capillary leak or cytokine release were observed. 30-day mortality was 0%.

We look forward to sharing additional data from this study in an oral presentation at ASH 2021.

We continue to advance additional pipeline programs. IMGC936 is an ADC in co-development with MacroGenics, Inc. that is designed to target ADAM9, an enzyme over-expressed in a range of solid tumors

and implicated in tumor progression and metastasis. IMGC936 incorporates a number of innovations, including antibody engineering to extend half-life, site-specific conjugation with a fixed drug-antibody ratio to enable higher dosing, and a next-generation linker and payload designed for improved stability and bystander activity. We presented preclinical data on IMGC936 at the American Association for Cancer Research Annual Meeting in April 2021, demonstrating anti-tumor activity in multiple solid tumor models, we continue to enroll patients in the Phase 1 study for this program, and expect initial data in 2022.

IMGN151 is our next generation anti-FRα product candidate in preclinical development. This ADC integrates innovation in each of its components, which we believe may enable IMGN151 to address patient populations with lower levels of FRα expression, including tumor types outside of ovarian cancer. We expect to submit the IND application for IMGN151 by the end of 2021.

We have selectively licensed restricted access to our ADC platform technology to other companies to expand the use of our technology and to provide us with cash to fund our own programs. These agreements typically provide the licensee with rights to use our ADC platform technology with its antibodies or related targeting vehicles to a defined target in order to develop products. The licensee is generally responsible for the development, clinical testing, manufacturing, registration, and commercialization of any resulting product candidate. As part of these agreements, we generally are entitled to receive upfront fees, potential milestone payments, and potential royalties on any sales of resulting products.

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. The information contained on the web site is not a part of this prospectus supplement.

THE OFFERING

Common stock offered by us	$175,000,000 of shares
Option to purchase additional shares	We have granted the underwriters the option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to $26,250,000 of additional shares of our common stock.
Common stock to be outstanding immediately after this offering	shares (shares if the underwriters elect to exercise in full their option to purchase additional shares from us).
Use of proceeds	We intend to use the net proceeds from this offering to fund our operations, including, but not limited to, commercialization activities, clinical trial activities, supply of drug product, business development activities, capital expenditures, and working capital. See “Use of Proceeds.”
Risk factors	Investing in our common stock involves a high degree of risk. See “Risk Factors” for a discussion of factors that you should consider before buying shares of our common stock.
Nasdaq Global Select Market symbol	“IMGN”

The number of shares of common stock to be outstanding after this offering is based on 202,443,297 shares of common stock outstanding as of September 30, 2021. It does not include:

- 20,860,232 shares of our common stock issuable upon exercise of stock options outstanding as of September 30, 2021 under our stock option plans as of that date, at a weighted average exercise price of $6.34 per share;
- 558,244 shares of our common stock issuable upon redemption of deferred stock units by non-employee directors outstanding as of September 30, 2021;
- 2,133 shares of our common stock issuable upon the vesting of restricted stock units outstanding as of September 30, 2021;
- 11,372,811 shares of our common stock available as of September 30, 2021 for future grant or issuance pursuant to our stock-based plans for employees, directors, and consultants;
- 1,253,364 shares of our common stock available as of September 30, 2021 for future issuance under our employee stock purchase plan; and
- 5,434,782 shares of our common stock that are issuable upon the exercise of a pre-funded warrant issued on August 11, 2021.

Except as otherwise indicated, all information in this prospectus supplement assumes:

- no exercise by the underwriters of their option to purchase additional shares; and
- no exercise, issuance, or conversion of the securities described above.

RISK FACTORS

An investment 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 described below and discussed under the section captioned "Risk Factors" contained in our Annual Report on Form 10-K for the year ended December 31, 2020, as filed with the SEC on March 1, 2021, which is incorporated by reference in this prospectus supplement and the accompanying prospectus in its entirety, together with other information in this prospectus supplement, the accompanying prospectus, and the information and documents incorporated by reference, and in any free writing prospectus that we have authorized for use in connection with this offering. These risks subject our business, financial condition, results of operation, and cash flows to substantial uncertainty and the potential for serious negative consequences, which could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment.

Risks related to our business

Interim, top-line, or preliminary data from our clinical trials that we announce may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we have publicly disclosed, and in the future will disclose, preliminary or top-line data from our preclinical studies and clinical trials, which are based on preliminary analyses of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations, and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. Therefore, final results from the studies may differ from the top-line results initially reported, and the final results may indicate different conclusions once additional data have been evaluated. As such, top-line data should be viewed with caution until the final data are available.

From time to time, we may also disclose interim data from our preclinical studies and clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the outcomes may materially change as patient enrollment continues and more data become available. Adverse differences between top-line, preliminary, or interim data, on the one hand, and final data, on the other, could significantly harm our business prospects. Further, disclosure of interim data by us or by our competitors could result in volatility in the price of our common stock after this offering.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions, or analyses, or may interpret or weigh the importance of data differently, which could negatively affect the approvability or commercialization of the particular product candidate. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is material or otherwise appropriate information to include in our disclosure. If the final results differ from the interim, top-line, or preliminary data, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and to commercialize, our product candidates may be harmed, which may negatively affect our business, financial condition, results of operations, and prospects.

We expect to file for approval for mirvetuximab from the FDA through the use of accelerated approval pathways. If unable to obtain approval under an accelerated pathway, we may be required to conduct additional pre-clinical studies or clinical trials beyond those that we currently contemplate, which could increase the expense of obtaining, and delay the receipt of, necessary marketing approvals. Even if we receive accelerated approval from the FDA, if our confirmatory trials do not verify clinical benefit, or if we do not comply with rigorous post-marketing requirements, the FDA may seek to withdraw accelerated approval.

We are seeking approval for mirvetuximab for the treatment of folate receptor alpha (FRα)-high platinum-resistant epithelial ovarian, primary peritoneal, or fallopian tube cancer with one to three prior lines of therapy under the accelerated approval pathway. Under the accelerated approval provisions in the Federal

Food, Drug, and Cosmetic Act (FDCA) and the FDA's implementing regulations, the FDA may grant accelerated approval to a product designed to treat a serious or life-threatening condition that demonstrates an effect on a surrogate endpoint, or intermediate clinical endpoint, that is reasonably likely to predict clinical benefit or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity, mortality, or other clinical benefit.

The FDA may not accept our application for accelerated approval, may not grant such approval on a timely basis, or may not grant approval at all. The FDA or foreign regulatory authorities could require us to conduct further studies prior to considering our application or granting approval of any type. We might not be able to fulfill the FDA's requirements in a timely manner, which would cause delays, or approval might not be granted because our submission is deemed incomplete by the FDA. A failure to obtain accelerated approval or any other form of expedited development, review, or approval for mirvetuximab would result in a longer time period to commercialization of mirvetuximab, would increase the cost of development of mirvetuximab, and would harm our competitive position in the marketplace.

Moreover, even if we receive accelerated approval from the FDA, we will be subject to rigorous post-marketing requirements, including the completion of confirmatory post-market clinical trial(s) to verify the clinical benefit of mirvetuximab, and submission to the FDA of all promotional materials 30-120 days prior to their dissemination. Products that receive accelerated approval may be subject to expedited withdrawal procedures if post-marketing studies fail to verify the predicted clinical benefit. The FDA could seek to withdraw accelerated approval for multiple reasons, including if we fail to conduct any required post-market study, a post-market study does not confirm the predicted clinical benefit, other evidence shows that the product is not safe or effective under the conditions of use, or we disseminate promotional materials that are found by the FDA to be false and misleading.

Side effects, serious adverse events, or other undesirable properties could arise from the use of mirvetuximab and, in turn, could delay or halt clinical trials, delay or prevent its regulatory approval, limit the commercial profile of its labeling, if approved, or result in significant negative consequences following any marketing approval.

Undesirable side effects or serious adverse events caused by mirvetuximab could cause us or regulatory authorities to interrupt, delay, or halt respective clinical trials and could result in a restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authorities. Any related drug-side effects or serious adverse events in our clinical trials could affect clinical trial patient recruitment or the ability of enrolled patients to complete the clinical trial or result in potential product liability claims.

In our Phase 3 SORAYA trial evaluating the safety and efficacy of mirvetuximab monotherapy in patients with FRα-high platinum-resistant epithelial ovarian, primary peritoneal, or fallopian tube cancer who had been previously treated with Avastin® (bevacizumab), the most commonly reported treatment-related adverse events included ocular events (blurred vision 41% all grade, 6% grade 3+; keratopathy 35% all grade, 9% grade 3+; dry eye 23% all grade, 2% grade 3+) and low grade gastrointestinal events (nausea 29% all grade, 0% grade 3+; and diarrhea 22% all grade, 2% grade 3+). Treatment-related adverse events leading to drug discontinuation occurred in 7% of patients.

In the randomized Phase 3 FORWARD I trial evaluating mirvetuximab compared to chemotherapy in women with FRα-positive, platinum-resistant epithelial ovarian, primary peritoneal, or fallopian tube cancer, the most common drug-related adverse events included nausea, blurred vision, and keratopathy.

In the Phase 1b FORWARD II study, doublet combinations of mirvetuximab with carboplatin and with bevacizumab were studied, as well as a triplet of mirvetuximab with carboplatin and bevacizumab. In these combinations, no new safety signals were seen; adverse events observed with the combinations were as expected based on the side effect profiles of each agent and duration of therapy.

Additionally, if mirvetuximab receives marketing approval, and we or others later identify undesirable side effects or serious adverse events caused by mirvetuximab, a number of potentially significant negative consequences could result, including:

- we may suspend or be forced to suspend marketing of mirvetuximab;
- we may be obliged to conduct a product recall or product withdrawal;
- regulatory authorities may suspend, vary, or withdraw their approvals of mirvetuximab;
- regulatory authorities may order the seizure of mirvetuximab;
- regulatory authorities may require additional warnings on the label or a risk evaluation and mitigation strategy (REMS) that could diminish the usage or otherwise limit the commercial success of mirvetuximab;
- we may be required to conduct post-marketing studies;
- we could be sued and held liable for harm caused to patients;
- we could be required to pay fines and face other administrative, civil, and criminal penalties; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of mirvetuximab, if approved.

While we have received orphan drug designation for mirvetuximab and other product candidates for specified indications, we may seek additional orphan drug designation for those and some of our other drug candidates. However, we may be unsuccessful in obtaining or may be unable to maintain the benefits associated with orphan drug designation, including the potential for market exclusivity.

Mirvetuximab has been granted orphan drug designation by the FDA in the United States, and orphan medicinal product status by the European Medicines Agency (EMA) in the European Union for the treatment of ovarian cancer. IMGN632 has been granted orphan drug designation by the FDA for the treatment of AML and for the treatment of BPDCN, and by the EMA for the treatment of BPDCN. As part of our business strategy, we may seek orphan drug designation for our other drug candidates; however, we may be unsuccessful.

Regulatory authorities in some jurisdictions, including the United States and the European Union, may designate drugs for relatively small patient populations as orphan drugs. Under the U.S. Orphan Drug Act, the FDA may designate a drug as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages, and user-fee waivers.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the EMA or the FDA from approving another marketing application for the same drug or biologic for that time period. Even if we obtain orphan drug exclusivity for a drug, that exclusivity may not effectively protect the designated drug from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve another product that meets the definition of a “same drug” under 21 C.F.R. 316.3 for the same condition if the FDA concludes that the later product is clinically superior by evidence that it is safer, more effective, or makes a major contribution to patient care. In addition, a designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan drug designation. Moreover, orphan drug exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition. Orphan drug designation neither shortens the development time or

regulatory review time of a drug nor gives the drug any advantage in the regulatory review or approval process. While we intend to seek additional orphan drug designation for our other drug candidates, we may never receive such designations. Even if we receive orphan drug designation for any of our drug candidates, there is no guarantee that we will enjoy the benefits of those designations or obtain orphan drug exclusivity.

As our business grows, we will become increasingly subject to additional healthcare regulation and enforcement by various government entities, and our failure to strictly adhere to these regulatory regimes could have a detrimental impact on our business.

In the United States, pharmaceutical manufacturers and their products are subject to extensive regulation at the federal and state level, including laws intended to prevent fraud and abuse in the healthcare industry. These laws, some of which will apply only if and when we have an approved product, include:

- federal false claims, false statements, and civil monetary penalties laws prohibiting, among other things, any person from knowingly presenting, or causing to be presented, a false claim for payment of government funds or knowingly making, or causing to be made, a false statement to get a false claim paid;
- the federal anti-kickback law, which prohibits, among other things, persons from offering, soliciting, receiving, or providing remuneration, directly or indirectly, to induce either the referral of an individual for, or the purchasing or ordering of, a good or service for which payment may be made under federal healthcare programs such as Medicare and Medicaid;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), which, in addition to privacy protections applicable to healthcare providers and other entities, prohibits executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- FDCA, which among other things, strictly regulates drug marketing, prohibits manufacturers from marketing products prior to approval or for off-label use, and regulates the distribution of samples;
- federal laws that require pharmaceutical manufacturers to report certain calculated product prices to the government or provide certain discounts or rebates to government authorities or private entities, often as a condition of reimbursement under government healthcare programs;
- the federal Open Payments (or federal “sunshine” law), which requires pharmaceutical and medical device companies to monitor and report certain financial interactions with certain healthcare providers to the Center for Medicare & Medicaid Services within the U.S. Department of Health and Human Services for re-disclosure to the public, as well as ownership and investment interests held by physicians and their immediate family members;
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers;
- analogous state laws and regulations, including: state anti-kickback and false claims laws and state laws governing privacy, security, and breaches of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and
- state laws that require pharmaceutical companies to comply with specific compliance standards, restrict financial interactions between pharmaceutical companies and healthcare providers, or require pharmaceutical companies to report payments to health care providers or marketing expenditures.

Ensuring compliance is time-consuming and costly. Given the breadth of the laws and regulations, limited guidance for certain laws and regulations, and evolving government interpretations of the laws and regulations, governmental authorities may possibly conclude that our business practices are non-compliant. If our operations are found to be in violation of any of the laws described above or any other government regulations that apply to us, we may be subject to penalties, including civil and criminal

penalties, damages, fines, exclusion from participation in government health care programs, such as Medicare and Medicaid, imprisonment, and the curtailment or restructuring of our operations, any of which could adversely affect our business, financial condition, results of operations, and prospects.

Risks related to this offering

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

We intend to use the net proceeds from this offering to fund our operations, which may include commercialization activities, clinical trial activities, supply of drug product, business development activities, capital expenditures, 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. In addition, if our management decides to invest all or part of the net proceeds of this offering, such investments may lose all or part of their value. Our shareholders may not agree with the manner in which our management chooses to allocate and spend the net proceeds from this offering and our management could spend the net proceeds in ways that do not 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 in this offering.

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 per share of the common stock you purchase in this offering. After giving effect to the sale by us of shares of common stock in this offering, and based on the public offering price of $ per share, less the underwriting discounts and commissions and estimated offering expenses payable by us, and a net tangible book value per share of our common stock of $0.38 as of September 30, 2021, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of $ per share in the net tangible book value of our common stock. If the underwriters exercise their option to purchase additional shares, then you will experience additional dilution. See “Dilution” on page S-12 for a more detailed discussion of the dilution you will incur in connection with this offering.

In addition, a significant number of shares of our common stock are issuable in connection with outstanding stock options, deferred stock units, restricted stock units, and a pre-funded warrant. To the extent that outstanding stock options have been or may be exercised, outstanding deferred stock units or restricted stock units are settled, the pre-funded warrant is exercised, or other securities are issued, investors purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our shareholders or result in downward pressure on the price of our common stock.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein include statements regarding future events or future results and, therefore, are "forward-looking statements." Forward-looking statements are neither historical facts nor assurances of future performance. Forward-looking statements generally can be identified by the use of forward-looking terminology, including the terms "believes," "expects," "may," "will," "should," "seeks," "projects," "approximately," "intends," "plans," "estimates," or "anticipates," or, in each case, their negatives, as well as other variations or comparable terminology. These forward-looking statements include, among other things, statements about:

- the initiation, cost, timing, progress and results of our current and future research and development activities, preclinical studies and clinical trials;
- the timing of, and our ability to obtain, regulatory approvals for our product candidates;
- our ability to advance any product candidate into, and successfully complete, clinical trials;
- the timing of our release of future data;
- the potential benefits of our product candidates;
- the potential benefits of our licensing arrangements; and
- our expected sources of future revenues, including from our licensing arrangements.

Actual results or events could differ materially from the projections expressed in or implied by our forward-looking statements. Each forward-looking statement is subject to risks and uncertainties, including, but not limited to, that further analysis of the top-line SORAYA data will alter our initial assessment of the results of that trial; that regulators, including the FDA, will not share our assessment of the SORAYA trial results and data generated by other trials; that future clinical trial results, including those from MIRASOL, will fail to support full approval; those related to our preclinical studies; our ability to conduct clinical trials of our product candidates and the results of such trials, including our ability to timely make compliant regulatory submissions; as well as risks and uncertainties relating to litigation, government regulation, and third-party reimbursement; economic conditions, markets, competition, intellectual property, and pricing trends and dynamics; key employees, future capital needs, dependence on our collaborators and their ability to develop ADCs utilizing our technology, and other factors detailed under the "Risk Factors" headings in this prospectus supplement, the accompanying prospectus, and in the discussion of risks and uncertainties under "Risk Factors" contained in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q or our Current Reports on Form 8-K, as filed with the SEC and which are incorporated herein or therein by reference.

In light of these risks and uncertainties, actual results and events may differ materially from the results and events discussed in, or implied by, the forward-looking statements contained in this prospectus supplement, the accompanying prospectus or in any document incorporated by reference herein or therein. Investors are cautioned not to place undue reliance on our forward-looking statements, which speak only as of the date of this prospectus supplement, the accompanying prospectus or the date of the document in which such statements appear or any earlier date indicated in such document. We expressly disclaim any obligation to update or alter any forward-looking statements, whether as a result of new information, future events, or otherwise. All subsequent forward-looking statements attributable to us or to any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained in, or referred to, in this section.

USE OF PROCEEDS

We estimate that the net proceeds we will receive from this offering will be approximately $164.2 million, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, or approximately $188.9 million if the underwriters exercise their option to purchase additional shares in full.

We intend to use the net proceeds from this offering to fund our operations, including, but not limited to, commercialization activities, clinical trial activities, supply of drug product, business development activities, capital expenditures, 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. The amounts and timing of these expenditures will depend on a number of factors, such as whether and when we receive any regulatory approvals for our product candidates, our ability to enter into additional collaboration, licensing, or similar transactions, the timing and progress of our research and development efforts, technological advances, and the competitive environment for our product candidates. 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.

DILUTION

If you invest in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share and the as adjusted net tangible book value per share after giving effect to this offering. We calculate net tangible book value per share by dividing the net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock. Dilution represents the difference between the amount per share paid by purchasers of shares in this offering and the as adjusted net tangible book value per share of our common stock immediately after giving effect to this offering. Our net tangible book value as of September 30, 2021 was approximately $77.1 million, or $0.38 per share.

After giving effect to the sale of shares of common stock by us at the public offering price of $ per share, less the underwriting discounts and commissions and estimated offering expenses payable by us, our net tangible book value as of September 30, 2021 would have been $ million, or $ per share of common stock. This represents an immediate increase in the as adjusted net tangible book value of $ per share to our existing shareholders and an immediate dilution of $ per share to new investors.

The following table illustrates this per share dilution:

Public offering price per share		$
Net tangible book value per share as of September 30, 2021	$ 0.38	
Increase in net tangible book value per share attributable to new investors purchasing shares in this offering		
As adjusted net tangible book value per share as of September 30, 2021 after this offering		
Dilution per share to new investors purchasing shares in this offering		$

If the underwriters exercise their option to purchase additional shares in full, the as adjusted net tangible book value would increase to approximately $ million, or $ per share, representing an increase in net tangible book value per share to existing shareholders of approximately $ per share, and there would be an immediate dilution of approximately $ per share to new investors.

The above discussion and table are based on 202,443,297 shares of common stock outstanding as of September 30, 2021 and do not include:

- 20,860,232 shares of our common stock issuable upon exercise of stock options outstanding as of September 30, 2021 under our stock option plans as of that date, at a weighted average exercise price of $6.34 per share;
- 558,244 shares of our common stock issuable upon redemption of deferred stock units by non-employee directors outstanding as of September 30, 2021;
- 2,133 shares of our common stock issuable upon the vesting of restricted stock units outstanding as of September 30, 2021;
- 11,372,811 shares of our common stock available as of September 30, 2021 for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants;
- 1,253,364 shares of our common stock available as of September 30, 2021 for future issuance under our employee stock purchase plan; and
- 5,434,782 shares of our common stock that are issuable upon the exercise of a pre-funded warrant issued on August 11, 2021.

To the extent that outstanding options are exercised, outstanding deferred stock units or restricted stock units are settled, the pre-funded warrant is exercised, or other securities are issued, you will

experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our shareholders.

UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated December 2021, among us and Jefferies LLC and Cowen and Company, LLC, as the representatives of the underwriters named below, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us the respective number of shares of common stock shown opposite its name below.

UNDERWRITER	NUMBER OF SHARES
Jefferies LLC	
Cowen and Company, LLC	
Guggenheim Securities, LLC	
Canaccord Genuity, LLC	
Total:	

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock, if any of them are purchased, other than the shares of our common stock that are the subject of the option referred to below. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased, or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act of 1933, as amended (the Securities Act), and to contribute to payments that the underwriters or their controlling persons may be required to make in respect of those liabilities.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in our common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for our common stock, that you will be able to sell any of our common stock held by you at a particular time, or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of our common stock subject to their acceptance of the shares from us. The underwriters reserve the right to withdraw, cancel, or modify offers to the public and to reject orders in whole or in part.

Commissions and expenses

The underwriters have advised us that they propose to offer the shares of our common stock to the public at the public offering price set forth on the cover page of this prospectus supplement and to certain dealers, which may include the underwriters, at that price less a concession not in excess of $ per share of our common stock. After the offering, the public offering price and concession to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus supplement.

The following table shows the per share and total public offering price, the underwriting discounts and commissions that we are to pay the underwriters, and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional $26,250,000 of shares of common stock.

	PER SHARE	WITHOUT EXERCISE OF OPTION TO PURCHASE ADDITIONAL SHARES	WITH FULL EXERCISE OF OPTION TO PURCHASE ADDITIONAL SHARES
Public offering price	$	$	$
Underwriting discounts and commissions paid by us	$	$	$
Proceeds to us, before expenses	$	$	$

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately $0.3 million. We have agreed to reimburse the underwriters for certain of their expenses in an amount up to $10,000.

Listing

Our common stock is listed on The Nasdaq Global Select Market under the symbol “IMGN.”

Option to purchase additional shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase, from time to time, in whole or in part, up to an aggregate of $26,250,000 of shares of common stock from us at the public offering price set forth on the cover page of this prospectus supplement, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares of our common stock proportionate to that underwriter’s initial purchase commitment as indicated in the table above.

No sales of similar securities

We and all of our directors and executive officers have agreed that, without the prior written consent of Jefferies LLC and Cowen and Company, LLC, on behalf of the underwriters, we and they will not, during the period ending 90 days after the date of this prospectus supplement (the “restricted period”):

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right, or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock;
- file any registration statement with the SEC relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities;

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. We may, however, make offers and sales under our Open Market Sale Agreement with Jefferies LLC with only the prior written consent of Jefferies LLC. In addition, we and each such person has agreed that, without the prior written consent of Jefferies LLC and Cowen and Company, LLC, on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock.

The restrictions described in the immediately preceding paragraph do not apply to, among other things:

- the sale of shares to the underwriters;

- the issuance by us of shares of common stock upon the exercise of an option or the conversion of a security outstanding on the date of this prospectus supplement, including, with respect to options due to expire during the restricted period, the related sale of shares of common stock to cover the exercise price of such options and any taxes related thereto;
- the establishment of a trading plan pursuant to Rule 10b5-1 (10b5-1 Plan) under the Securities Exchange Act of 1934, as amended (the Exchange Act), for the transfer of shares of common stock, provided that such 10b5-1 Plan does not provide for the transfer of shares of common stock during the restricted period, and no public announcement or filing under the Exchange Act regarding the establishment of such 10b5-1 Plan is required or is voluntarily made; or
- transfers, sales, tenders, or other dispositions of common stock or any security convertible into or exercisable or exchangeable for common stock pursuant to a bona fide third-party tender offer, merger, amalgamation, consolidation, or other similar transaction made to or involving all holders of the common stock or such other securities pursuant to a change of control of the ownership of the company.

Stabilization

The underwriters have advised us that, pursuant to Regulation M under the Exchange Act, certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions, or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of our common stock at a level above that which might otherwise prevail in the open market. Establishing short sale positions may involve either “covered” short sales or “naked” short sales. “Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out a 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 option to purchase additional shares.

“Naked” short sales are sales in excess of the option to purchase additional shares of our common stock. 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 there may be downward pressure on the price of the shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of our common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of our common stock. A syndicate covering transaction is a bid for or the purchase of shares of our common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriters’ purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if shares of our common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and, therefore, had not been effectively placed by such syndicate member.

Neither we, nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities, and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on The Nasdaq Global Select Market in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the

completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Electronic distribution

This prospectus supplement and the accompanying prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their respective affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus supplement and the accompanying prospectus in electronic format, the information on the underwriters' web sites, and any information contained in any other web site maintained by any of the underwriters, is not part of this prospectus supplement or the accompanying prospectus, has not been approved or endorsed by us or the underwriters, and should not be relied upon by investors.

Other activities and relationships

The underwriters and certain of their affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing, and brokerage activities. The underwriters and certain of their affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and certain of their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own accounts and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they may routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions that consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color, or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Disclaimers about non-U.S. jurisdictions

Australia

This prospectus supplement is not a disclosure document for the purposes of Australia's Corporations Act 2001 (Cth) of Australia (Corporations Act) has not been lodged with the Australian Securities & Investments Commission and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus supplement in Australia:

A. You confirm and warrant that you are either:

- a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;
- a "sophisticated investor" under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to the Company which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;

- a person associated with the Company under Section 708(12) of the Corporations Act; or
- a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act.

To the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person, or professional investor under the Corporations Act, any offer made to you under this prospectus supplement is void and incapable of acceptance.

B. You warrant and agree that you will not offer any of the shares issued to you pursuant to this prospectus supplement for resale in Australia within 12 months of those shares being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

Canada

A. Resale Restrictions. The distribution of the shares in Canada is being made only in the provinces of Ontario, Quebec, Alberta, and British Columbia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these securities are made. Any resale of the shares in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the securities.

B. Representations of Canadian Purchasers. By purchasing shares in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the shares of common stock without the benefit of a prospectus qualified under those securities laws as it is an "accredited investor" as defined under National Instrument 45-106—Prospectus Exemptions;
- the purchaser is a "permitted client" as defined in National Instrument 31-103—Registration Requirements, Exemptions and Ongoing Registrant Obligations;
- where required by law, the purchaser is purchasing as principal and not as agent; and the purchaser has reviewed the text above under Resale Restrictions.

C. Conflicts of Interest. Canadian purchasers are hereby notified that the underwriters are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105—Underwriting Conflicts from having to provide certain conflict of interest disclosure in this document.

D. Statutory Rights of Action. Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the prospectus supplement (including any amendment thereto) such as this document contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser of these securities in Canada should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

E. Enforcement of Legal Rights. All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and,

as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

F. Taxation and Eligibility for Investment. Canadian purchasers of shares of common stock should consult their own legal and tax advisors with respect to the tax consequences of an investment in the company in their particular circumstances and about the eligibility of the shares of common stock for investment by the purchaser under relevant Canadian legislation.

European Economic Area

In relation to each Member State of the European Economic Area (each, an "EEA Member State"), an offer to the public of any securities which are the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus may not be made in that EEA Member State except that an offer to the public in that EEA Member State of any securities may be made at any time under the following exemptions under the Prospectus Regulation:

(a) to any legal entity which is a "qualified investor" as defined in the Prospectus Regulation;

(b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), as permitted under the Prospectus Regulation, subject to obtaining the prior consent of the underwriters or the underwriters nominated by us for any such offer; or

(c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of securities shall require the Company or the representatives to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation,

For the purposes of this provision, the expression an "offer to the public" in relation to any securities in any EEA Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129.

Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell securities, whether as principal or agent; or to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (the SFO) and any rules made under that Ordinance; or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong (the CO) or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO. No document, invitation or advertisement relating to the securities has been issued or may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under that Ordinance.

This prospectus supplement has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus supplement may not be issued, circulated, or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus supplement and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Israel

This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968 (the Securities Law) and has not been filed with or approved by the Israel Securities Authority. In Israel, this prospectus is being distributed only to, and is directed only at, and any offer of the shares of common stock is directed only at, (i) a limited number of persons in accordance with the Israeli Securities Law and (ii) investors listed in the first addendum (the Addendum) to the Israeli Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million, and "qualified individuals," each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case, purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors are required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

Japan

This offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended) (FIEL) and the Initial Purchaser will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations, and ministerial guidelines of Japan.

Singapore

This prospectus supplement has not been and will not be lodged or registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares of common stock may not be circulated or distributed, nor may the shares of common stock be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA) (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares of common stock are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor, securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the securities pursuant to an offer made under Section 275 of the SFA except:

    (i) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

    (ii) where no consideration is or will be given for the transfer;

(iii) where the transfer is by operation of law;

(iv) as specified in Section 276(7) of the SFA; or

(v) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (the SIX) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus supplement has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus supplement nor any other offering or marketing material relating to the securities or this offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus supplement nor any other offering or marketing material relating to this offering, the Company or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus supplement will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (the CISA). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

United Kingdom

This prospectus supplement is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the Order) and/or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order and other persons to whom it may lawfully be communicated (each such person being referred to as a relevant person).

This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Ropes & Gray LLP, Boston, Massachusetts. Latham & Watkins LLP, San Diego, California will act as counsel to the underwriters in connection with this offering.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2020, and the effectiveness of our internal control over financial reporting as of December 31, 2020, as set forth in their reports, which are incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Exchange Act, and file annual, quarterly, and current reports, proxy statements, and other information with the SEC. SEC filings are available at the SEC's web site at 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 also have filed exhibits and schedules with the registration statement that are excluded from this prospectus supplement and the accompanying 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.

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

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with the SEC, 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:

- our Annual Report on Form 10-K for the year ended December 31, 2020 filed on March 1, 2021;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2021, June 30, 2021, and September 30, 2021 filed on May 10, 2021, July 30, 2021, and October 29, 2021, respectively;
- our Current Reports on Form 8-K filed on June 17, 2021, August 12, 2021, September 23, 2021, and November 17, 2021 (in each case, except for information contained therein which is furnished rather than filed);
- the portions of our definitive proxy statement on Schedule 14A filed on April 28, 2021 that are incorporated by reference in our Annual Report on Form 10-K for the year ended December 31, 2020;
- 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 Exchange Act, including amendments or reports filed for the purpose of updating such description; and
- all of the filings that we make pursuant to sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until all of the securities to which this prospectus supplement relates have 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 Exchange Act.

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.

PROSPECTUS

COMMON STOCK
PREFERRED STOCK
DEBT SECURITIES
WARRANTS
UNITS

This prospectus will allow us to issue, from time to time at prices and on terms to be determined at or prior to the time of the offering, any combination of the securities in this prospectus, either individually or in units. We may also offer common stock or preferred stock upon conversion of the debt securities, common stock upon conversion of the preferred stock, or common stock, preferred stock or debt securities upon the exercise of warrants. In addition, this prospectus may be used to offer securities for the account of persons other than us. We will provide you with specific terms of any offering in one or more supplements to this prospectus. This prospectus may not be used to offer or sell our securities unless accompanied by a prospectus supplement. You should read this prospectus and any prospectus supplement, as well as any documents incorporated by reference into this prospectus or any prospectus supplement, carefully before you invest.

Our common stock is listed on the Nasdaq Global Select Market under the symbol "IMGN." On December 17, 2020, the last reported sale price of our common stock was $7.50 per share. Prospective purchasers of our securities are urged to obtain current information as to the market prices of our securities, where applicable.

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks that we have described on page 5 of this prospectus under the caption "Risk Factors." We may include specific risk factors in supplements to this prospectus under the caption "Risk Factors."

Our securities may be sold directly to investors, through agents designated from time to time or to or through underwriters or dealers. If any underwriters or agents are involved in the sale of our securities with respect to which this prospectus is being delivered, the names of such underwriters or agents 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 securities 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 December 18, 2020.

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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, shares of our common stock and preferred stock, various series of debt securities and/or warrants to purchase any of such securities, either individually or in units, may be offered in one or more offerings. This prospectus provides you with a general description of the securities that may be offered. Each time a type or series of securities is offered under this prospectus, 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 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 supplements, 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.

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.

This prospectus may not be used to consummate sales of our securities 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.

Our trademarks include, without limitation, our name and corporate logo. Other service marks, trademarks, and trade names contained in this prospectus, any prospectus supplement, or the documents incorporated by reference herein and therein are the property of their respective owners.

PROSPECTUS SUMMARY

The following is a summary of our business and the offering of our securities under this prospectus. We urge you to read this entire prospectus, including the more detailed consolidated financial statements, notes to the consolidated financial statements, and other information incorporated by reference from our other filings with the SEC or included in any applicable prospectus supplements. Investing in our securities involves risks. Therefore, carefully consider the risk factors in any prospectus supplements and in our most recent annual, quarterly and current reports and other filings with the SEC, as well as other information in this prospectus and any prospectus supplements and the documents incorporated by reference herein or therein, before purchasing our securities. Each of the risk factors could adversely affect our business, operating results, and financial condition, as well as adversely affect the value of an investment in our securities.

About ImmunoGen, Inc.

We are a clinical-stage biotechnology company focused on developing the next generation of antibody-drug conjugates, or ADCs, to improve outcomes for cancer patients. By generating targeted therapies with enhanced anti-tumor activity and favorable tolerability profiles, we aim to disrupt the progression of cancer and offer patients more good days. We call this our commitment to “target a better now.”

An ADC with our proprietary technology comprises an antibody that binds to a target found on tumor cells and is conjugated to one of our potent anti-cancer agents as a “payload” to kill the tumor cell once the ADC has bound to its target. ADCs are an expanding approach to the treatment of cancer, with multiple approved products and the number of agents in development growing significantly in recent years.

We have established a leadership position in ADCs with a portfolio of differentiated product candidates to address both solid tumors and hematological malignancies.

Our lead program is mirvetuximab soravtansine, a first-in-class investigational ADC targeting folate receptor alpha, or FRα, a cell-surface protein overexpressed in several epithelial tumors, including ovarian, endometrial, and non-small-cell lung cancers.

We are pursuing two pivotal trials of mirvetuximab: SORAYA, a single-arm clinical trial that, if successful, could lead to accelerated approval of mirvetuximab; and MIRASOL, a randomized Phase 3 clinical trial that, if successful, could lead to full approval of mirvetuximab. We are actively enrolling both studies and expect to report top-line data from SORAYA in the third quarter of 2021 and top-line data from MIRASOL in 2022. If SORAYA is successful, we expect to submit an application for accelerated approval of mirvetuximab in the applicable patient population to the U.S. Food and Drug Administration, or FDA, during the second half of 2021 and, thereafter, to seek full approval on the basis of the confirmatory Phase 3 trial, MIRASOL.

Beyond our anticipated monotherapy indication, we are generating data with mirvetuximab in combination with other agents to expand into earlier lines of ovarian cancer therapy. To this end, we published data at the American Society of Clinical Oncology (ASCO) 2020 annual meeting and the European Society for Medical Oncology (ESMO) 2020 Congress showing encouraging anti-tumor activity and favorable tolerability profiles for mirvetuximab as a doublet with bevacizumab at ASCO and as a triplet with carboplatin and bevacizumab at ESMO. With the benefit of these data, we are working to define the best path forward to label expansion with mirvetuximab in combination regimens. Finally, we are supporting an investigator-sponsored study of mirvetuximab plus carboplatin, which we expect to start in early 2021.

In October 2020, we entered into a collaboration and license agreement with Hangzhou Zhongmei Huadong Pharmaceutical Co., Ltd., or Huadong, a subsidiary of Huadong Medicine Co., Ltd., under which Huadong will exclusively develop and commercialize mirvetuximab in the People’s Republic of China, Hong Kong, Macau, and Taiwan.

As part of our ongoing development efforts, we have generated a new class (indolinobanzodiazepines) of cytotoxic payloads that we refer to as IGNs. Our IGNs are designed to alkylate DNA without cross-linking, which has provided a broad therapeutic index in preclinical models. Specifically, IGN ADCs have retained the anti-tumor potency of crosslinking drugs with less toxicity to normal cells in *in vitro* and animal models.

IMGN632 is an investigational ADC comprised of a high-affinity antibody designed to target CD123 with site-specific conjugation to our most potent IGN payload. We are advancing IMGN632 in clinical trials for patients with acute myeloid leukemia, or AML, and blastic plasmacytoid dendritic cell neoplasm, or BPDCN. In October 2020, we announced that the FDA granted Breakthrough Therapy designation for IMGN632 for the treatment of patients with relapsed or refractory BPDCN and the FDA and the European Medicines Agency have each granted IMGN632 Orphan Drug Designation in BPDCN. In December 2020, updated data were presented at the American Society of Hematology (ASH) Annual Meeting, demonstrating a favorable safety profile and encouraging monotherapy activity for IMGN632 in BPDCN. Furthermore, we have worked closely with the FDA to define a path to approval in BPDCN. Based on FDA guidance, we have moved forward with a pivotal cohort of up to 20 newly-diagnosed BPDCN patients and expect to complete enrollment and generate top-line data from that cohort within the next 12 to 18 months, with a biologics license application submission expected in 2022.

We continue to advance select preclinical programs, led by IMGC936. IMGC936 is an investigational ADC in co-development with MacroGenics, Inc., or MacroGenics, designed to target ADAM9, an enzyme overexpressed in a range of solid tumors and implicated in tumor progression and metastasis. The Investigational New Drug application, or IND, for IMGC936 was accepted by the FDA in the second quarter of 2020 and we have begun enrolling patients in the Phase 1 study.

Additionally, we presented encouraging preclinical data on our next generation anti-folate receptor alpha candidate, IMGN151, at the American Academy of Cancer Research Virtual Annual Meeting II in June 2020. This ADC moved into preclinical development in the second quarter of 2020 and we expect to file the IND for IMGN151 in the second half of 2021.

Collaborating on ADC development with other companies allows us to generate revenue, mitigate expenses, enhance our capabilities, and extend the reach of our proprietary platform. Our most advanced partner program is Roche's marketed product, Kadcyla®. Our ADC technology is also used in candidates in clinical development with several other partners. We have evolved our partnering approach to pursue relationships where we can gain access to technology and complementary capabilities, such as our technology swap with CytomX Therapeutics, Inc., as well as co-development and co-commercialization opportunities, such as our relationship with MacroGenics.

Risk Factor Summary

Investing in our securities involves a high degree of risk. Below is a summary of material factors that make an investment in our securities speculative or risky. Importantly, this summary does not address all of the risks that we face. Additional discussion of the risks summarized in this risk factor summary, as well as other risks that we face, can be found under the heading "Risk Factors" below in this prospectus and contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

- We have a history of operating losses and expect to incur significant additional operating losses and may never be profitable.
- 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.
- A pandemic, epidemic, or outbreak of an infectious disease, such as the COVID-19 pandemic, may materially and adversely affect our business and our financial results.
- If our ADC technology does not produce safe, effective, and commercially viable products or if such products fail to obtain or maintain FDA approval, our business will be severely harmed.
- Clinical trials for our product candidates and those of our collaborators will be lengthy and expensive, and their outcome is uncertain.
- If our product candidates or those of our collaborators do not gain market acceptance, our business will suffer.

- If our collaborators 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 affected.
- If our product requirements for clinical trials are significantly higher than we estimated, the inability to procure additional antibody production, conjugation, or fill/finish services in a timely manner could impair our ability to initiate or advance our clinical trials.
- We are currently contractually required to obtain all of the DM4 used in mirvetuximab from a single third-party manufacturer, and any delay or interruption in such manufacturer's operations could impair our ability to advance preclinical and clinical trials and commercialization of our product candidates and our collaborators' products candidates.
- We currently rely on, and expect to continue to rely on, third-party manufacturers to produce our antibodies, linkers, payloads, drug substance, and drug product, and any delay or interruption in such manufacturers' operations could impair our ability to advance clinical trials and commercialization of our product candidates.
- If we are unable to protect our intellectual property rights adequately, the value of our technology and our product candidates could be diminished.
- 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 to commercialize, our product candidates.
- Any inability to license proprietary technologies or processes from third parties that we use in connection with the development and manufacture of our product candidates may impair our business.
- We and our collaborators are subject to extensive government regulations and we and our collaborators may not be able to obtain necessary regulatory approvals.
- Our and our collaborators' product candidates will remain subject to ongoing regulatory review even if they receive marketing approval. If we or our collaborators fail to comply with regulations applicable to approved products, these approvals could be lost and the sale of our or our collaborators' products could be suspended.
- Failure to comply with the Foreign Corrupt Practices Act and other similar anti-corruption laws and anti-money laundering laws, as well as export control laws, customs laws, sanctions laws, and other laws governing our operations could subject us to significant penalties and damage our reputation.
- We may be subject to, or may in the future become subject to, U.S. federal and state and foreign laws and regulations imposing obligations on how we collect, use, disclose, store, and process personal information. Our actual or perceived failure to comply with such obligations could result in liability or reputational harm and adversely affect our business. Ensuring compliance with such laws could also impair our efforts to maintain and expand our customer base, and thereby decrease our revenue.
- Our stock price may be volatile and fluctuate significantly and results announced by us and our collaborators or competitors could cause our stock price to decline.
- The potential sale of additional shares of our common stock may cause our stock price to decline.
- We do not intend to declare or pay cash dividends on our common stock in the foreseeable future.

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 prospectus.

RISK FACTORS

Investing in our securities involves risk. The prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to an investment in us. Before deciding on investing in our securities, 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 subsequent quarterly and current reports we file with the SEC. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This prospectus and the documents we have filed with the SEC that are incorporated herein by reference contain such "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995.

Words such as "may," "anticipate," "estimate," "expects," "projects," "intends," "plans," "believes," "tracking" and words and terms of similar substance used in connection with any discussion of future operating or financial performance, identify forward-looking statements. Forward-looking statements represent management's present judgment regarding future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. These risks include, but are not limited to, risks and uncertainties regarding our preclinical studies, our ability to conduct clinical trials of our product candidates and the results of such trials, as well as risks and uncertainties relating to litigation, government regulation and third-party reimbursement, economic conditions, markets, products, competition, intellectual property, services and prices, key employees, future capital needs, dependence on our collaborators and their ability to develop ADCs utilizing our technology, and other factors. Please also see the discussion of risks and uncertainties under "Risk Factors" contained in this prospectus, any supplements to this prospectus, our most recent annual report on Form 10-K, as revised or supplemented by subsequent quarterly reports on Form 10-Q and current reports on Form 8-K, as well as any amendments thereto, and other filings with the SEC and which are incorporated herein by reference.

In light of these assumptions, risks, and uncertainties, the results and events discussed in the forward-looking statements contained in this prospectus or any document incorporated herein by reference might not occur. Investors are cautioned not to place undue reliance on the forward-looking statements, which speak only as of the date of this prospectus or the date of the document incorporated by reference in this prospectus. We are not under any obligation, and we expressly disclaim any obligation, to update or alter any forward-looking statements, whether as a result of new information, future events, or otherwise. All subsequent forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section.

USE OF PROCEEDS

Except as provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities by us through this prospectus for general corporate purposes. Except as provided in the applicable prospectus supplement, we will not receive any proceeds if securities are sold by a selling securityholder. Additional information on the use of net proceeds from the sale of securities covered by this prospectus may be set forth in the prospectus supplement relating to the specific offering.

DESCRIPTION OF COMMON STOCK

We are authorized to issue 300,000,000 shares of common stock, par value $.01 per share. On December 17, 2020, we had 194,709,705 shares of common stock outstanding and approximately 344 shareholders of record.

The following summary of certain provisions of our common stock does not purport to be complete. You should refer to our restated articles of organization and our amended and restated by-laws, both of which are included as exhibits to the registration statement we have filed with the SEC in connection with this offering. The summary below is also qualified by provisions of applicable law.

General

Holders of common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the shareholders, and do not have cumulative voting rights. Subject to preferences that may be applicable to any outstanding shares of preferred stock, holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our board of directors out of funds legally available for dividend payments. All shares of common stock outstanding as of the date of this prospectus and, upon issuance and sale, all shares of common stock that we may offer pursuant to this prospectus, will be fully paid and nonassessable. The holders of common stock have no preferences or rights of conversion, exchange, pre-emption or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. In the event of any liquidation, dissolution or winding-up of our affairs, holders of common stock will be entitled to share ratably in our assets that are remaining after payment or provision for payment of all of our debts and obligations and after liquidation payments to holders of outstanding shares of preferred stock, if any.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Broadridge Corporate Issuer Solutions, Inc.

The Nasdaq Global Select Market

Our common stock is listed for quotation on the Nasdaq Global Select Market under the symbol “IMGN.” On December 17, 2020, the last reported sale price of our common stock was $7.50 per share.

DESCRIPTION OF PREFERRED STOCK

We are authorized to issue 5,000,000 shares of preferred stock, par value $.01 per share. As of December 17, 2020, no shares of our preferred stock were issued and outstanding. The following summary of certain provisions of our preferred stock does not purport to be complete. You should refer to our restated articles of organization and our amended and restated by-laws, both of which are included as exhibits to the registration statement we have filed with the SEC in connection with this offering. The summary below is also qualified by provisions of applicable law.

General

Our board of directors may, without further action by our shareholders, from time to time, direct the issuance of shares of preferred stock in series and may, at the time of issuance, determine the rights, preferences and limitations of each series, including voting rights, dividend rights, and redemption and liquidation preferences. Satisfaction of any dividend preferences of outstanding shares of preferred stock would reduce the amount of funds available for the payment of dividends on shares of our common stock.

Holders of shares of preferred stock may be entitled to receive a preference payment in the event of any liquidation, dissolution, or winding-up of our company before any payment is made to the holders of shares of our common stock. In some circumstances, the issuance of shares of preferred stock may render more difficult or tend to discourage a merger, tender offer, or proxy contest, the assumption of control by a holder of a large block of our securities, or the removal of incumbent management. Upon the affirmative vote of our board of directors, without shareholder approval, we may issue shares of preferred stock with voting and conversion rights which could adversely affect the holders of shares of our common stock.

If a specific series of preferred stock is offered under this prospectus, we will describe the terms of the preferred stock in the prospectus supplement for such offering and will file a copy of the certificate establishing the terms of the preferred stock with the SEC. To the extent required, this description will include:

- the title and stated value;
- the number of shares offered, the liquidation preference per share, and the purchase price;
- the dividend rate(s), period(s) and/or payment date(s), or method(s) of calculation for such dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption, if applicable;
- any listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price (or how it will be calculated) and conversion period;
- whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange price (or how it will be calculated) and exchange period;
- voting rights, if any, of the preferred stock;
- a discussion of any material and/or special United States federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights upon liquidation, dissolution, or winding up of the affairs of ImmunoGen; and
- any material limitations on the issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights upon liquidation, dissolution, or winding up of ImmunoGen.

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the debt securities that may be offered under this prospectus. While the terms we have summarized below will apply generally to any future debt securities that may be offered pursuant to this prospectus, we will describe the particular terms of any debt securities that may be offered in more detail in the applicable prospectus supplement. If we so indicate in a prospectus supplement, the terms of any debt securities offered under that prospectus supplement may differ from the terms we describe below, and to the extent the terms set forth in a prospectus supplement differ from the terms described below, the terms set forth in the prospectus supplement shall control.

Under this prospectus, debt securities, which may be senior or subordinated, may be sold from time to time, in one or more offerings. We will issue any such senior debt securities under a senior indenture that we will enter into with a trustee to be named in the senior indenture. We will issue any such subordinated debt securities under a subordinated indenture, which we will enter into with a trustee to be named in the subordinated indenture. We have filed forms of these documents as exhibits to the registration statement,

which includes this prospectus. We use the term “indentures” to refer to both the senior indenture and the subordinated indenture. The indentures will be qualified under the Trust Indenture Act of 1939, as in effect on the date of the indenture, or the Trust Indenture Act. We use the term “debenture trustee” to refer to either the trustee under the senior indenture or the trustee under the subordinated indenture, as applicable.

The following summaries of material provisions of the senior debt securities, the subordinated debt securities, and the indentures are subject to, and qualified in their entirety by reference to, all the provisions of the indenture applicable to a particular series of debt securities.

General

Each indenture provides that debt securities may be issued from time to time in one or more series and may be denominated and payable in United States dollars or foreign currencies or units based on or relating to United States dollars or foreign currencies, including euros. Neither indenture limits the amount of debt securities that may be issued thereunder, and each indenture provides that the specific terms of any series of debt securities shall be set forth in, or determined pursuant to, an authorizing resolution and/or a supplemental indenture, if any, relating to such series.

We will describe in each prospectus supplement the following terms relating to a series of debt securities:

- the title;
- the aggregate principal amount and any limit on the amount that may be issued;
- the currency or units based on or relating to currencies in which debt securities of such series are denominated and the currency or units in which principal or interest or both will or may be payable;
- whether we will issue the series of debt securities in global form, the terms of any global securities, and who the depositary will be;
- the maturity date and the date or dates on which principal will be payable;
- the interest rate, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the date or dates interest will be payable and the record dates for interest payment dates or the method for determining such dates;
- whether or not the debt securities will be secured or unsecured, and the terms of any secured debt;
- the terms of the subordination of any series of subordinated debt;
- the place or places where payments will be payable;
- our right, if any, to defer payment of interest and the maximum length of any such deferral period;
- the date, if any, after which, and the price at which, we may, at our option, redeem the series of debt securities pursuant to any optional redemption provisions;
- the date, if any, on which, and the price at which we are obligated, pursuant to any mandatory sinking fund provisions or otherwise, to redeem, or at the holder’s option to purchase, the series of debt securities;
- whether the indenture will restrict our ability to pay dividends or will require us to maintain any asset ratios or reserves;
- whether we will be restricted from incurring any additional indebtedness;
- a discussion on any material or special United States federal income tax considerations applicable to a series of debt securities;
- the denominations in which we will issue the series of debt securities, if other than denominations of $1,000 and any integral multiple thereof; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the debt securities.

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon declaration of acceleration of their maturity pursuant to the terms of the indenture. We will provide you with information on the federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

Conversion or Exchange Rights

We will set forth in the prospectus supplement the terms, if any, on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale; No Protection in Event of a Change of Control or Highly Leveraged Transaction

The indentures may not contain any covenant that restricts our ability to merge or consolidate, or sell, convey, transfer or otherwise dispose of all or substantially all of our assets. However, any successor to or acquirer of such assets will be required to assume all of our obligations under the indentures or the debt securities, as appropriate.

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions that may afford holders of the debt securities protection in the event we have a change of control or in the event of a highly leveraged transaction (whether or not such transaction results in a change of control), which could adversely affect holders of debt securities.

Events of Default Under the Indenture

The following will be events of default under the indentures with respect to any series of debt securities that we may issue:

- if we fail to pay interest when due and our failure continues for 90 days and the time for payment has not been extended or deferred;
- if we fail to pay the principal, or premium, if any, when due and the time for payment has not been extended or delayed;
- if we fail to observe or perform any other covenant relating to such series contained in the debt securities of such series or the applicable indentures, other than a covenant specifically relating to and for the benefit of holders of another series of debt securities, and our failure continues for 90 days after we receive written notice from the debenture trustee or holders of not less than a majority in aggregate principal amount of the outstanding debt securities of the applicable series; and
- if specified events of bankruptcy, insolvency, or reorganization occur as to us.

No event of default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency, or reorganization) necessarily constitutes an event of default with respect to any other series of debt securities. The occurrence of an event of default may constitute an event of default under any bank credit agreements we may have in existence from time to time. In addition, the occurrence of certain events of default or an acceleration under the indenture may constitute an event of default under certain of our other indebtedness outstanding from time to time.

If an event of default with respect to debt securities of any series at the time outstanding occurs and is continuing, then the trustee or the holders of not less than a majority in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the debenture trustee if given by the holders), declare to be due and payable immediately the principal (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) of and premium and accrued and unpaid interest, if any, on all debt securities of that series. Before a judgment or decree for payment of the money due has been obtained with respect to debt securities of any series, the holders of a majority in principal amount of the outstanding debt securities of that series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the

debt securities of such series represented at such meeting) may rescind and annul the acceleration if all events of default, other than the non-payment of accelerated principal, premium, if any, and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the applicable indenture (including payments or deposits in respect of principal, premium or interest that had become due other than as a result of such acceleration). We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an event of default.

Subject to the terms of the indentures, if an event of default under an indenture shall occur and be continuing, the debenture trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the debenture trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method, and place of conducting any proceeding for any remedy available to the debenture trustee or exercising any trust or power conferred on the debenture trustee, with respect to the debt securities of that series, provided that:

- the direction so given by the holder is not in conflict with any law or the applicable indenture; and
- subject to its duties under the Trust Indenture Act, the debenture trustee need not take any action that might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will only have the right to institute a proceeding under the indentures or to appoint a receiver or trustee, or to seek other remedies if:

- the holder previously has given written notice to the debenture trustee of a continuing event of default with respect to that series;
- the holders of at least a majority in aggregate principal amount of the outstanding debt securities of that series have made written request, and such holders have offered reasonable indemnity to the debenture trustee to institute the proceeding as trustee; and
- the debenture trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series (or at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) other conflicting directions within 60 days after the notice, request, and offer.

These limitations will not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the applicable debenture trustee regarding our compliance with specified covenants in the applicable indenture.

Modification of Indenture; Waiver

The debenture trustee and we may change the applicable indenture without the consent of any holders with respect to specific matters, including:

- to fix any ambiguity, defect, or inconsistency in the indenture; and
- to change anything that does not materially adversely affect the interests of any holder of debt securities of any series issued pursuant to such indenture.

In addition, under the indentures, the rights of holders of a series of debt securities may be changed by us and the debenture trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) that is affected. However, the debenture trustee and we may make the following changes only with the consent of each holder of any outstanding debt securities affected:

- extending the fixed maturity of the series of debt securities;
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or a premium payable upon the redemption of any debt securities;
- reducing the principal amount of discount securities payable upon acceleration of maturity;
- making the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security; or
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment or waiver.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) may on behalf of the holders of all debt securities of that series waive our compliance with provisions of the indenture. The holders of a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all the debt securities of such series waive any past default under the indenture with respect to that series and its consequences, except a default in the payment of the principal of, premium or any interest on any debt security of that series or in respect of a covenant or provision, which cannot be modified or amended without the consent of the holder of each outstanding debt security of the series affected; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Discharge

Each indenture will provide that we can elect to be discharged from our obligations with respect to one or more series of debt securities, except for obligations to:

- register the transfer or exchange of debt securities of the series;
- replace stolen, lost or mutilated debt securities of the series;
- maintain paying agencies;
- hold monies for payment in trust;
- compensate and indemnify the trustee; and
- appoint any successor trustee.

In order to exercise our rights to be discharged with respect to a series, we will have to deposit with the trustee money or government obligations sufficient to pay all the principal of, any premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange, and Transfer

We will issue the debt securities of each series only in fully registered form without coupons and, unless we otherwise specify in the applicable prospectus supplement, in denominations of $1,000 and any integral multiple thereof. The indentures provide that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with, or on behalf of, The Depository Trust Company or another depositary named by us and identified in a prospectus supplement with respect to that series.

At the option of the holder, subject to the terms of the indentures and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indentures and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange

or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange or in the applicable indenture, we will make no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Information Concerning the Debenture Trustee

The debenture trustee other than during the occurrence and continuance of an event of default under the applicable indenture, will undertake to perform only those duties as are specifically set forth in the applicable indenture. Upon an event of default under an indenture, the debenture trustee under such indenture must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the debenture trustee is under no obligation to exercise any of the powers given it by the indentures at the request of any holder of debt securities unless it is offered reasonable security and indemnity against the costs, expenses, and liabilities that it might incur.

Payment and Paying Agents

Unless we indicate otherwise in the applicable prospectus supplement, on any interest payment date, we will pay the interest on any debt securities to the person in whose name such debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

We will pay the principal of and any premium and interest on the debt securities of a particular series at the office of the paying agents designated by us, except that unless we otherwise indicate in the applicable prospectus supplement, will we make interest payments by check which we will mail to the holder. Unless we otherwise indicate in a prospectus supplement, we will designate the corporate trust office of the debenture trustee in the City of New York as our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series.

All money we pay to a paying agent or the debenture trustee for the payment of the principal of or any premium or interest on any debt securities which remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the security thereafter may look only to us for payment thereof.

Governing Law

The indentures and the debt securities will be governed by and construed in accordance with the laws of the State of New York, except to the extent that the Trust Indenture Act is applicable.

Subordination of Subordinated Debt Securities

Our obligations pursuant to any subordinated debt securities will be unsecured and will be subordinate and junior in priority of payment to certain of our other indebtedness to the extent described in a prospectus supplement. The subordinated indenture does not limit the amount of senior indebtedness we may incur. It also does not limit us from issuing any other secured or unsecured debt.

DESCRIPTION OF WARRANTS

Warrants to purchase shares of our common stock, preferred stock and/or debt securities in one or more series together with other securities or separately may be offered, as described in the applicable prospectus supplement. Below is a description of certain general terms and provisions of the warrants that may be offered. Particular terms of the warrants will be described in the warrant agreements and the prospectus supplement to the warrants.

The applicable prospectus supplement will contain, where applicable, the following terms of and other information relating to the warrants:

- the specific designation and aggregate number of, and the price at which the warrants will be issued;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- the designation, amount, and terms of the securities purchasable upon exercise of the warrants;
- if applicable, the exercise price for shares of our common stock and the number of shares of common stock to be received upon exercise of the warrants;
- if applicable, the exercise price for shares of our preferred stock, the number of shares of preferred stock to be received upon exercise, and a description of that series of our preferred stock;
- if applicable, the exercise price for our debt securities, the amount of debt securities to be received upon exercise, and a description of that series of debt securities;
- the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if you may not continuously exercise the warrants throughout that period, the specific date or dates on which you may exercise the warrants;
- whether the warrants will be issued in fully registered form or bearer form, in definitive or global form, or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;
- any applicable material United States federal income tax consequences;
- if applicable, the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars, or other agents;
- the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange;
- if applicable, the date from and after which the warrants and the common stock, preferred stock and/or debt securities will be separately transferable;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- information with respect to book-entry procedures, if any;
- the anti-dilution provisions of the warrants, if any;
- any redemption or call provisions;
- whether the warrants are to be sold separately or with other securities as parts of units; and
- any additional terms of the warrants, including terms, procedures, and limitations relating to the exchange and exercise of the warrants.

DESCRIPTION OF UNITS

Units consisting of common stock, preferred stock, debt securities and/or warrants for the purchase of common stock, preferred stock and/or debt securities in one or more series may be offered. In this prospectus, we have summarized certain general features of the units. We urge you, however, to read the prospectus supplements related to the series of units being offered, as well as the unit agreements that contain the terms of the units. We will file as exhibits to an amendment to the registration statement of which this prospectus is a part, or will incorporate by reference from a current report on Form 8-K that we file with the SEC, as applicable, the form of unit agreement and any supplemental agreements that describe the terms of the series of units being offered before the issuance of the related series of units.

We may evidence each series of units by unit certificates that would issue under a separate agreement that we may enter into with a unit agent. Each unit agent, if one is appointed, will be a bank or trust company that we select. We will indicate the name and address of the unit agent, if one is appointed, in the applicable prospectus supplement relating to a particular series of units.

SELLING SECURITYHOLDERS

Selling securityholders are persons or entities that, directly or indirectly, have acquired or will from time to time acquire, securities in various private or other transactions. Such selling securityholders may be parties to registration rights agreements with us, or we otherwise may have agreed or will agree to register their securities for resale. The purchasers of our securities, as well as their transferees, pledges, donees, or successors, all of whom we refer to as "selling securityholders," may from time to time offer and sell the securities pursuant to this prospectus and any applicable prospectus supplement. The applicable prospectus supplement will set forth the name of each of the selling securityholders and the number of shares of our common stock or other relevant securities beneficially owned by such selling securityholders that are covered by such prospectus supplement.

CERTAIN PROVISIONS OF MASSACHUSETTS LAW AND OF THE COMPANY'S ARTICLES OF ORGANIZATION AND BY-LAWS

Anti-Takeover Provisions under Massachusetts law and our Massachusetts Articles of Organization and By-laws

Provisions of Massachusetts law and our restated articles of organization and amended and restated by-laws contain other provisions that are intended to enhance the likelihood of continuity and stability in the composition of the board of directors and which may have the effect of delaying, deferring or preventing a future takeover or change in control of our company unless such takeover or change in control is approved by our board of directors.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Massachusetts statutory business combinations provisions. We are subject to Chapter 110F of the Massachusetts General Laws, an anti-takeover law. In general, this statute prohibits a publicly-held Massachusetts corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person becomes an interested stockholder, unless (i) the interested stockholder obtains the approval of the board of directors prior to becoming an interested stockholder, (ii) the interested stockholder acquires 90% of the outstanding voting stock of the corporation (excluding shares held by certain affiliates of the corporation) at the time it becomes an interested stockholder, or (iii) the business combination is approved by both the board of directors and the holders of two-thirds of the outstanding voting stock of the corporation (excluding shares held by the interested stockholder). Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns (or at any time within the prior three years did own) 5% or more of the outstanding

voting stock of the corporation. A "business combination" includes a merger, a stock or asset sale, and certain other transactions resulting in a financial benefit to the interested shareholders.

Massachusetts General Laws Chapter 110D, entitled "Regulation of Control Share Acquisitions," in general provides that any shareholder of a company subject to this statute who acquires 20% or more of the outstanding voting stock of a company may not vote such stock unless the shareholders of the company so authorize. Although our amended and restated by-laws currently exclude us from this statute, the board of directors may amend our by-laws to subject us to this statute prospectively.

Chapter 110C of the Massachusetts General Laws requires the person commencing a takeover bid to file certain information with the Secretary of the Commonwealth and the target company and provides that a bidder who fails to disclose its intent to gain control over a target corporation prior to acquiring 5% of the target company's stock is precluded from making any takeover bid for a period of one year after crossing the 5% threshold.

Blank check preferred stock. Our restated article of organization allows our board of directors to issue shares of preferred stock without the approval of our shareholders, which is referred to as "blank check" preferred stock. The effects of such issuance, among other things, could include the dilution in the voting power of our common stock if the preferred stock has voting rights and the reduction or restriction in the rights of holders of our common stock to receive a payment in the event of any liquidation, dissolution or winding-up of our company. In some circumstances, the issuance of shares of preferred stock may render more difficult or expensive or tend to discourage a merger, tender offer or proxy contest, the assumption of control by a holder of a large block of our securities, or the removal of incumbent management. In addition, the board of directors could also utilize the shares of preferred stock in order to adopt a shareholder rights plan, or "poison pill," which could have the effect of discouraging or delaying a takeover of the company.

Advance notice provisions for shareholder proposals and shareholder nominations of directors. Our amended and restated by-laws provide that, for nominations to the board of directors or for other business to be properly brought by a shareholder before a meeting of shareholders, the shareholder must first have given timely notice of the proposal in writing to our Secretary. For an annual meeting, a shareholder's notice generally must be delivered not less than 45 days nor more than 75 days prior to the anniversary of the mailing date of the proxy statement for the previous year's annual meeting. For special meetings called to elect directors, a shareholder's notice must generally be delivered not less than 60 days (or ten days after public disclosure of the meeting date if later) nor more than 90 days prior to the meeting. Detailed requirements as to the form of the notice and information required in the notice are specified in the amended and amended and restated by-laws. If it is determined that business was not properly brought before a meeting in accordance with our amended and restated by-laws, such business will not be conducted at the meeting. Although our by-laws do not give our board of directors the power to approve or disapprove shareholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting, our by-laws may have the effect of precluding the conduct of some business at a meeting if the proper procedures are not followed or may discourage or defer a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of us.

Classified board of directors. Section 8.06(b) of the Massachusetts Business Corporation Act provides that unless a company decides otherwise, the terms of directors of a public Massachusetts company shall be staggered by dividing the directors into three groups, as nearly equal in number as possible, with only one group of directors being elected each year. Sections 8.06(d) and (e) of the Massachusetts Business Corporation Act provide that when directors are so classified, (i) shareholders may remove directors only for cause, (ii) the number of directors shall be fixed only by the vote of the board of directors, (iii) vacancies and newly created directorships shall be filled solely by the affirmative vote of a majority of the remaining directors, and (iv) a decrease in the number of directors will not shorten the term of any incumbent director. Our board of directors opted out of this staggered board of directors requirement, and all of our directors currently serve for one-year terms and are elected annually. Under Section 8.06(c)(2) of the Massachusetts Business Corporation Act, our board of directors may opt into the staggered board of directors requirements of Section 8.06(b) and application of Sections 8.06(d) and (e). If the board of directors opts into this structure, these provisions are likely to increase the time required for shareholders to change the composition of the board of directors. For example, in general, at least two annual meetings

would be necessary for shareholders to effect a change in a majority of the members of the board of directors. The provision for a classified board could prevent a party who acquires control of a large portion of our outstanding common stock from obtaining control of our board of directors until our second annual shareholders' meeting following the date the acquirer obtains the stock interest. The classified board provision could have the effect of discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us and could increase the likelihood that incumbent directors will retain their positions.

Shareholders can only act by unanimous written consent and restrictions are in place as to who can call a special meeting of shareholders. Although our restated articles of organization and amended and restated by-laws allow our shareholders to act by written consent, such written consent must be signed by all shareholders entitled to vote on the matter approved. This significantly restricts the ability of our shareholders to act by written consent and essentially provides that our shareholders may only act at a duly called shareholders' meeting. In addition, special meetings of the shareholders may be called only by our President, our board of directors, and one or more shareholders holding at least 40% of our voting stock.

Limitations on Liability and Indemnification of Officers and Directors

Our restated articles of organization and amended and restated by-laws limit the liability of our officers and directors to the fullest extent permitted by the Massachusetts Business Corporation Act and provides that we will indemnify them to the fullest extent permitted by such law.

LEGAL MATTERS

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

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2019, and the effectiveness of our internal control over financial reporting as of December 31, 2019, as set forth in their reports, which are incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on their authority 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, or the Exchange Act, and file annual, quarterly, and current reports, proxy statements, and other information with the SEC. SEC filings are available at the SEC's web site at http://www.sec.gov.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act 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 website at www.immunogen.com, through which you can access our SEC filings. The information set forth on our website 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 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 year ended December 31, 2019, filed on March 11, 2020;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, filed on May 5, 2020;
- our Quarterly Report on Form 10-Q for the quarter ended June 30, 2020, filed on August 5, 2020;
- our Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed on November 6, 2020;
- our Current Reports on Form 8-K, filed on January 22, 2020 (other than Item 7.01), January 23, 2020 (other than Item 7.01), January 27, 2020, February 14, 2020 (with respect to Item 5.05), June 18, 2020, July 2, 2020, July 22, 2020, September 25, 2020, October 13, 2020, October 19, 2020 (other than Item 7.01), October 26, 2020, December 7, 2020 (other than Item 7.01), December 11, 2020, and December 18, 2020;
- the portions of our definitive proxy statement on Schedule 14A, filed on April 28, 2020, that are deemed "filed" with the SEC under the Exchange Act;
- 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 Exchange Act, including amendments or reports filed for the purpose of updating such description; and
- all of the filings that we make pursuant to the Exchange Act, until all of the securities to which this prospectus relates have 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 Exchange Act, which filings will be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of filing of such documents.

In addition, all documents subsequently filed by us pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, before the date any offering under this prospectus is terminated or completed are deemed to be incorporated by reference into, and to be a part of, this prospectus.

Any statement contained in this prospectus or in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

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, 830 Winter Street, Waltham, Massachusetts 02451, (781) 895-0600.

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.

$175,000,000

Common stock

Prospectus supplement

Joint Book-Running Managers

Jefferies

Cowen

Guggenheim Securities

Lead Manager

Canaccord Genuity

December , 2021