

IMMUNOGEN INC
Form 424B5
May 11, 2017

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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-216438

PROSPECTUS

Up to \$50,000,000

Common Stock

We have entered into a sales agreement with Cowen and Company, LLC, or Cowen, dated March 3, 2017, relating to shares of our common stock offered by this prospectus. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$50,000,000 from time to time through Cowen acting as our agent.

Our common stock is listed on The Nasdaq Global Select Market under the symbol "IMGN." On May 4, 2017, the last reported sale price of our common stock was \$4.11 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be "at the market offerings" as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act, including sales made directly on or through The Nasdaq Global Select Market, the existing trading market for our common stock. Cowen is not required to sell any specific number or dollar amount of securities, but will act as sales agent and use commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Cowen and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Cowen will be entitled to compensation at a fixed commission rate equal to 3.0% of the gross sales price per share sold. In connection with the sale of our common stock on our behalf, Cowen will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Cowen will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Cowen with respect to certain liabilities, including liabilities under the Securities Act.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE THE "RISK FACTORS" ON PAGE S-6 OF THIS PROSPECTUS AND IN THE DOCUMENTS INCORPORATED BY REFERENCE IN THIS PROSPECTUS CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR COMMON STOCK.

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.

Cowen and Company

May 11, 2017.

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ABOUT THIS PROSPECTUS

This prospectus relates to part of a registration statement that we have filed with the Securities and Exchange Commission, or SEC, utilizing a "shelf" registration process. The \$50,000,000 of common stock that may be offered, issued and sold under this prospectus is included in the \$200,000,000 of securities that may be offered, issued and sold by us pursuant to our shelf registration statement.

This prospectus includes or incorporates by reference important information about us, our common stock, and other matters you should know before investing. You should read this prospectus as well as additional information described under "Where You Can Find More Information" before making an investment decision.

You should rely only on this prospectus and the information incorporated or deemed to be incorporated by reference in this prospectus or in any free writing prospectuses we provide you. We have not, and Cowen has not, authorized anyone to provide you with information that is in addition to, or different from, that contained or incorporated by reference in this prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. We may also file one or more prospectus supplements to this prospectus. We are not, and Cowen is not, offering to sell securities in any jurisdiction where the offer or sale is not permitted. You should not assume that the information contained or incorporated by reference in this prospectus is accurate as of any date other than as of the date of this prospectus or in the case of the documents incorporated by reference, the date of such documents regardless of the time of delivery of this prospectus or any sale of our common shares. Our business, financial condition, liquidity, results of operations, and prospects may have changed since those dates.

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

Unless the context otherwise requires, "ImmunoGen," "the Company," "we," "us," "our" and similar names refer to ImmunoGen, Inc. and our subsidiaries. When we refer to "you" or "yours" we mean the investors and potential investors in the shares of common stock offered hereby.

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 what we believe to be the most important aspects 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. Investing in our securities involves risks. Therefore, carefully consider the risk factors set forth in this prospectus of incorporated by reference herein, as well as other information in this prospectus and the documents incorporated by reference herein, 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 that develops targeted cancer therapeutics using our proprietary antibody-drug conjugate, or ADC, technology. An ADC with our 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 two approved products and the number of agents in development more than doubling during the last five years.

We have established a leadership position in ADCs. Our technology is deployed in Roche's Kadcyla® (ado-trastuzumab emtansine), the first ADC to demonstrate superiority over standard of care in a randomized pivotal trial, EMILIA, and gain approval from the U.S. Food and Drug Administration, or FDA. Following Kadcyla are 13 clinical-stage ADCs that integrate our technology: four wholly owned by us and nine through our partnerships with Amgen, Bayer, Biotest, Lilly, Novartis and Sanofi.

Our proprietary portfolio is led by mirvetuximab soravtansine, a first-in-class ADC targeting folate-receptor alpha, or FR α . Following meetings with the FDA and the European Medicines Agency in the third quarter of 2016 to review our protocol, we initiated a Phase 3 registration trial, FORWARD I, with mirvetuximab soravtansine for use as single-agent therapy to treat patients with platinum-resistant ovarian cancer whose tumors express high or medium levels of FR α and who have received up to three prior treatment regimens. Additionally, we are accruing patients in a companion study, FORWARD II, to evaluate mirvetuximab soravtansine in combination regimens to expand the number of patients with ovarian cancer eligible for treatment with the ADC. FORWARD II consists of cohorts assessing mirvetuximab soravtansine in combination with, in separate doublets, Avastin® (bevacizumab), pegylated liposomal doxorubicin, or PLD, and carboplatin. We have also entered into a collaboration with Merck under which Merck is providing Keytruda® (pembrolizumab) for evaluation in combination with mirvetuximab soravtansine as part of the FORWARD II study. We expect to begin reporting clinical findings from FORWARD II in the second quarter of 2017.

We have built a productive platform that continues to generate innovative and proprietary ADCs, including IMGN779, our CD33-targeting product candidate for acute myeloid leukemia, or AML. IMGN779 integrates one of our new DNA-alkylating IGN payload agents and is progressing through dose escalation in a Phase 1 trial in AML. We also are advancing IMGN632, a preclinical CD123-targeting ADC that uses an even more potent IGN payload agent with a new engineered linker and novel antibody, which we are developing for hematological malignancies including AML. We expect to submit an Investigational New Drug application to the FDA for IMGN632 in the third quarter of 2017.

In addition to fueling our organic growth, we also selectively license limited rights to use of our ADC technology to other companies. These licenses can provide us with cash through upfront and milestone payments, research and manufacturing support payments, and royalties on commercial sales,

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if any, as well as access to complementary technology and capabilities. The most advanced partner program is Roche's marketed product, Kadcyla.

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

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THE OFFERING

The following summary contains basic information about our common stock and the offering and is not intended to be complete. It does not contain all the information that may be important to you. For a more complete understanding of our common stock, you should read this prospectus and the documents referred to herein.

| | |
|---|--|
| Issuer | ImmunoGen, Inc. |
| Common stock offered by us | Shares of our common stock having an aggregate offering price of up to \$50,000,000. |
| Common stock to be outstanding after this offering | Up to 101,513,839 shares (as more fully described in the notes following this table), assuming sales of 12,165,450 shares of our common stock in this offering at an assumed offering price of \$4.11 per share, which was the last reported sale price of our common stock on The Nasdaq Global Select Market on May 4, 2017. The actual number of shares issued in connection with this offering will vary depending on how many shares of our common stock we choose to sell and the prices at which such sales occur. |
| Manner of offering | Sales of shares of our common stock under this prospectus may be made by any method deemed to be an "at the market offering" as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended. Subject to the terms of the sales agreement, Cowen and Company, LLC. will make all sales using commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of The Nasdaq Global Select Market, on mutually agreeable terms between Cowen and Company, LLC. and us. See "Plan of Distribution" beginning on page S-12 of this prospectus. |
| Sales agent | Cowen and Company, LLC |
| Use of Proceeds | We expect to use the net proceeds from this offering, if any, for working capital and general corporate purposes. See "Use of Proceeds" beginning on page S-9 of this prospectus. |
| Risk Factors | Your investment in shares of our common stock involves substantial risks. You should consider the matters referred to under the heading "Risk Factors" in this prospectus, including the risk factors incorporated by reference herein from our filings with the SEC. |
| The Nasdaq Global Select Market symbol | "IMGN" |
| The number of shares of common stock to be outstanding after this offering is based on 89,348,389 shares of common stock outstanding as of March 31, 2017. It does not include: | |

13,689,624 shares of our common stock issuable upon exercise of stock options outstanding as of March 31, 2017 under our stock option plans as of that date, at a weighted average exercise price of \$9.94 per share;

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325,959 shares of our common stock issuable upon redemption of deferred stock units by non-employee directors as of March 31, 2017;

3,111,328 shares of our common stock available as of March 31, 2017 for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants; and

23,877,750 shares of our common stock that are issuable upon the conversion of our 4.50% Convertible Senior Notes due 2021.

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RISK FACTORS

An investment in our common stock involves risks. You should carefully consider the risks described below, as well as the other information included or incorporated by reference in this prospectus, including "Risk Factors" included in Item 1A of Part I of our Transition Report on Form 10-K for the six-month transition period ended December 31, 2016, filed with the SEC on March 3, 2017, and in any subsequent Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, before making an investment decision. In addition, please read "About this Prospectus" in this prospectus and "Special Note Regarding Forward-Looking Statements" in this prospectus, where we describe additional uncertainties associated with our business and the forward-looking statements included or incorporated by reference in this prospectus. Please note that additional risks not currently known to us or that we currently deem immaterial may also impair our business and operations.

Risks related to this offering

You will incur immediate and substantial dilution as a result of this offering.

The assumed offering price per share of our common stock in this offering is substantially higher than the net tangible book value (deficit) per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value (deficit) per share after this offering. Assuming the sale of \$50,000,000 of our common stock in this offering, based on the assumed offering price of \$4.11 per share, which was the last reported sale price of our common stock on The Nasdaq Global Select Market on May 4, 2017, and net tangible book value (deficit) per share of our common stock of \$(1.88) as of March 31, 2017, if you purchase shares in this offering, you will suffer immediate and substantial dilution of \$5.29 per share in the as adjusted net tangible book value (deficit) of common stock purchased. See "Dilution" beginning on page S-10 of this prospectus for a more detailed description of the dilution to new investors in this offering.

We have broad discretion in the use of net proceeds from this offering and may not use them effectively.

We currently intend to use the net proceeds, if any, from this offering for working capital and general corporate purposes. See "Use of Proceeds" beginning on page S-9 of this prospectus for further detail. Although we currently intend to use the net proceeds, if any, from this offering in such a manner, we will have broad discretion in the application of such net proceeds. Our failure to apply these funds effectively could result in unfavorable returns and uncertainty about our prospects, each of which could cause the price of our common stock to decline. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or loses value.

You may experience future dilution as a result of future equity offerings.

To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

Sales of a substantial number of shares of our common stock in the public markets could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity or equity-based securities. We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

We have not paid dividends in the past and do not expect to pay dividends in the future on our common stock, and any return on investment may be limited to the value of our common stock.

We have never paid cash dividends and we currently intend to retain any future earnings and do not anticipate paying cash dividends in the foreseeable future. We are not legally or contractually required to pay dividends and certain of our debt agreement with our major stockholder contains restrictions on our ability to pay cash dividends. The declaration and payment of all future dividends, if any, will be at the sole discretion of our board of directors, which retains the right to change our dividend policy at any time, and may be limited by our debt arrangements in place from time to time. The payment of dividends will depend on our earnings, capital requirements, financial condition, prospects and other factors our board of directors may deem relevant. If we do not pay dividends, our common stock may be less valuable because stockholders must rely on sales of their common stock after price appreciation, which may never occur, to realize any future gains on their investment.

The common stock offered hereby will be sold in "at the market offerings" and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares in this offering at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold, and there is no minimum or maximum sales price. Investors may experience a decline in the value of their shares as a result of share sales made at prices lower than the prices they paid.

The actual number of shares we will issue under the sales agreement, at any one time or in total, is uncertain.

Subject to certain limitations in the sales agreement and compliance with applicable law, we have the discretion to deliver a placement notice to Cowen at any time throughout the term of the sales agreement. The number of shares that are sold by Cowen after delivering a placement notice will fluctuate based on the market price of the common shares during the sales period and limits we set with Cowen. Because the price per share of each share sold will fluctuate based on the market price of our common stock during the sales period, it is not possible at this stage to predict the number of shares that will be ultimately issued.

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.

Such statements in connection with any discussion of future operations or financial performance are identified by the use of words such as "may," "anticipate," "estimate," "expect," "project," "intend," "plan," "believe," and other words and terms of similar meaning. Such statements are based on management's expectations and are subject to certain factors, risks and uncertainties that may cause actual results, outcome of events, timing and performance to differ materially from those expressed or implied by such 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 detailed under the heading "Risk Factors" in this prospectus as updated and supplemented by the discussion of risks and uncertainties under "Risk Factors" contained in our most recent Transition or 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 well as any amendments thereto, as filed with the SEC and which are incorporated herein by reference. The information contained in this document is believed to be current as of the date of this document. We do not intend to update any of the forward-looking statements after the date of this document to conform these statements to actual results or to changes in our expectations, except as required by law.

In light of these assumptions, risks and uncertainties, the results and events discussed in the forward-looking statements contained in this prospectus or in 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 to 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

We may issue and sell shares of our common stock having aggregate gross sales proceeds of up to \$50,000,000 from time to time under this prospectus. Because there is no minimum offering amount required pursuant to the sales agreement with Cowen, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. Actual net proceeds will depend on the number of shares we sell and the prices at which such sales occur. There can be no assurance that we will sell any shares under or fully utilize the sales agreement with Cowen as a source of financing.

We intend to use the net proceeds, if any, from sales of shares of our common stock covered by this prospectus for working capital and general corporate purposes, which may include, among other things, the funding of capital and other expenditures and the acquisition or in-license of additional drugs, product candidates or technology.

Our expected use of net proceeds, if any, from the sale of shares of common stock pursuant to the sales agreement with Cowen represents our intentions based upon our present plans and business conditions, which could change in the future as our plans and business conditions evolve. The amount and timing of our actual expenditures will depend upon numerous factors, including, but not limited to, results of our research and development efforts, the timing and success of preclinical studies, our ongoing clinical trials or clinical trials we may commence in the future, the timing of regulatory submissions and the feedback from regulatory authorities. As a result, our management will have broad discretion over the use of the net proceeds from this offering, if any.

We may temporarily invest the net proceeds in investment-grade, interest-bearing securities pending their use for the purposes described above. We have not determined the amount of net proceeds to be used specifically for such purposes and, as a result, management will retain broad discretion over the allocation of net proceeds, if any.

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 (deficit) per share after giving effect to this offering. We calculate net tangible book value (deficit) per share by dividing the net tangible book value (deficit), 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 (deficit) per share of our common stock immediately after giving effect to this offering. Our net tangible book value (deficit) as of March 31, 2017 was approximately \$(167.5) million, or \$(1.88) per share.

After giving effect to the sale of our common stock in the aggregate amount of \$50.0 million at an assumed offering price of \$4.11 per share, which was the last reported sale price of our common stock on The Nasdaq Global Select Market on May 4, 2017, and after deducting offering commissions and estimated expenses payable by us, our net tangible book value (deficit) as of March 31, 2017 would have been \$(119.4) million, or \$(1.18) per share of common stock. This represents an immediate increase in the net tangible book value (deficit) of \$0.70 per share to our existing stockholders and an immediate dilution in net tangible book value (deficit) of \$5.29 per share to new investors. The following table illustrates this per share dilution:

| | |
|--|-----------|
| Assumed offering price per share | \$ 4.11 |
| Net tangible book value (deficit) per share as of March 31, 2017 | \$ (1.88) |
| Increase per share attributable to this offering | 0.70 |

As adjusted net tangible book value (deficit) per share as of March 31, 2017 after this offering (1.18)

| | |
|-------------------------------------|---------|
| Dilution per share to new investors | \$ 5.29 |
|-------------------------------------|---------|

The table above assumes for illustrative purposes that an aggregate of 12,165,450 shares of our common stock are sold at a price of \$4.11 per share, which was the last reported sale price of our common stock on The Nasdaq Global Select Market on May 4, 2017, for aggregate gross proceeds of \$50.0 million. The shares sold in this offering, if any, will be sold from time to time at various prices. An increase of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$4.11 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$50.0 million during the term of the sales agreement with Cowen is sold at that price, would increase our as adjusted net tangible book value (deficit) per share after the offering to \$(1.20) per share and would increase the dilution in net tangible book value (deficit) per share to new investors in this offering to \$6.31 per share, after deducting offering commissions and estimated expenses payable by us. A decrease of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$4.11 per share shown in the table above, assuming all of our common stock in the amount of \$50.0 million during the term of the sales agreement with Cowen is sold at that price, would decrease our as adjusted net tangible book value (deficit) per share after the offering to \$(1.13) per share and would decrease the dilution in net tangible book value (deficit) per share to new investors in this offering to \$4.24 per share, after deducting offering commissions and estimated offering expenses payable by us. This information is supplied for illustrative purposes only and may differ based on the actual offering price and the actual number of shares offered.

The above discussion is based on 89,348,389 shares of common stock outstanding as of March 31, 2017. It does not include:

13,689,624 shares of our common stock issuable upon exercise of stock options outstanding as of March 31, 2017 under our stock option plans as of that date, at a weighted average exercise price of \$9.94 per share;

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325,959 shares of our common stock issuable upon redemption of deferred stock units by non-employee directors as of March 31, 2017;

3,111,328 shares of our common stock available as of March 31, 2017 for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants; and

23,877,750 shares of our common stock that are issuable upon the conversion of our 4.50% Convertible Senior Notes due 2021.

To the extent that options are exercised or the notes are converted, investors purchasing shares in this offering could 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 equity-based securities, the issuance of these securities could result in further dilution to our stockholders.

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PLAN OF DISTRIBUTION

We have entered into a sales agreement with Cowen, under which we may issue and sell from time to time up to \$50,000,000 of our common stock through Cowen as our sales agent. Sales of our common stock, if any, will be made at market prices by any method that is deemed to be an "at the market offering" as defined in Rule 415 under the Securities Act, including sales made directly on the Nasdaq Global Select Market or any other trading market for our common stock. If authorized by us in writing, Cowen may also purchase shares of our common stock as principal.

Cowen will offer our common stock subject to the terms and conditions of the sales agreement on a daily basis or as otherwise agreed upon by us and Cowen. We will designate the maximum amount of common stock to be sold through Cowen on a daily basis or otherwise determine such maximum amount together with Cowen. Subject to the terms and conditions of the sales agreement, Cowen will use its commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us. We may instruct Cowen not to sell common stock if the sales cannot be effected at or above the price designated by us in any such instruction. Cowen or we may suspend the offering of our common stock being made through Cowen under the sales agreement upon proper notice to the other party. Cowen and we each have the right, by giving written notice as specified in the sales agreement, to terminate the sales agreement in each party's sole discretion at any time.

The aggregate compensation payable to Cowen as sales agent is equal to 3.0% of the gross sales price of the shares sold through it pursuant to the sales agreement. We have also agreed to reimburse Cowen up to \$50,000 of Cowen's actual outside legal expenses incurred by Cowen in connection with this offering, and for certain other expenses, including Cowen's FINRA counsel fees in an amount up to \$12,500. We estimate that the total expenses of the offering payable by us, excluding commissions payable to Cowen under the sales agreement, will be approximately \$357,500.

The remaining sales proceeds, after deducting any expenses payable by us and any transaction fees imposed by any governmental, regulatory, or self-regulatory organization in connection with the sales, will equal our net proceeds for the sale of such common stock.

Cowen will provide written confirmation to us following the close of trading on the Nasdaq Global Select Market on each day in which common stock is sold through it as sales agent under the sales agreement. Each confirmation will include the number of shares of common stock sold through it as sales agent on that day, the volume weighted average price of the shares sold, the percentage of the daily trading volume and the net proceeds to us.

We will report at least quarterly the number of shares of common stock sold through Cowen under the sales agreement, the net proceeds to us and the compensation paid by us to Cowen in connection with the sales of common stock.

Settlement for sales of common stock will occur, unless the parties agree otherwise, on the third business day that is also a trading day following the date on which any sales were made in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

In connection with the sales of our common stock on our behalf, Cowen may be deemed to be an "underwriter" within the meaning of the Securities Act, and the compensation paid to Cowen may be deemed to be underwriting commissions or discounts. We have agreed in the sales agreement to provide indemnification and contribution to Cowen against certain liabilities, including liabilities under the Securities Act. As sales agent, Cowen will not engage in any transactions that stabilizes our common stock.

Our common stock is listed on the Nasdaq Global Select Market and trades under the symbol "IMGN." The transfer agent of our common stock is Broadridge Corporate Issuer Solutions, Inc.

Cowen and/or its affiliates have provided, and may in the future provide, various investment banking and other financial services for us for which services they have received and, may in the future receive, customary fees.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts. Cowen is being represented in connection with this offering by Duane Morris LLP, Newark, New Jersey.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Transition Report on Form 10-KT for the six-month period ended December 31, 2016, and the effectiveness of our internal control over financial reporting as of December 31, 2016, as set forth in their reports (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note A to the consolidated financial statements), 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, and file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference facilities at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference facilities. SEC filings are also available at the SEC's web site at <http://www.sec.gov>. Our common stock is listed on The Nasdaq Global Select Market, and you can read and inspect our filings at the offices of the Financial Industry Regulatory Authority at 1735 K Street, Washington, D.C. 20006.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act 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 that we file with them. Incorporation by reference allows us to disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. Statements in this prospectus regarding the provisions of certain documents filed with, or incorporated by reference in, the registration statement are not necessarily complete and each statement is qualified in all respects by that reference. Copies of all or any part of the registration statement, including the documents incorporated by reference or the exhibits, may be obtained upon payment of the prescribed rates at the offices of the SEC listed above in "Where to Find More Information." The documents we are incorporating by reference are:

our Annual Report on Form 10-K for the year ended June 30, 2016 filed on August 25, 2016;

our Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 filed on November 4, 2016;

our Transition Report on Form 10-K for the six-month transition period ended December 31, 2016 filed on March 3, 2017;

our Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 filed on May 5, 2017;

our Current Reports on Form 8-K filed on August 9, 2016, August 17, 2016, September 16, 2016, September 29, 2016, as amended on November 4, 2016, December 13, 2016, January 4, 2017, January 23, 2017 and April 5, 2017;

the portions of our definitive proxy statement on Schedule 14A filed on October 28, 2016 that are deemed "filed" with the SEC under the Securities Exchange Act of 1934, as amended;

the portions of our definitive proxy statement on Schedule 14A filed on April 28, 2017 that are deemed "filed" with the SEC under the Securities Exchange Act of 1934, as amended;

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

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

The SEC file number for each of the documents listed above is 001-17999.

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

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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, MA 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.

S-15

Up to \$50,000,000

Common Stock

PROSPECTUS

Cowen and Company

May 11, 2017
