

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Precigen, Inc.

(Exact name of registrant as specified in its charter)

Virginia
(State or other jurisdiction of
Incorporation or organization)

26-0084895
(I.R.S. Employer
Identification Number)

**20374 Seneca Meadows Parkway
Germantown, Maryland 20876
(301) 556-9900**

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

**Helen Sabzevari
President and Chief Executive Officer
Precigen, Inc.**

**20374 Seneca Meadows Parkway
Germantown, Maryland 20876
(301) 556-9900**

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent For Service)

Copy to:

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Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of Securities Act.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.



The information in this prospectus is not complete and may be changed. The selling stockholders may not sell these securities pursuant to this prospectus until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and is not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED AUGUST 19, 2025

PROSPECTUS



Precigen, Inc.

**143,809,489 Shares of Common Stock
79,000 Shares of Preferred Stock**

This prospectus relates to the resale, from time to time, by the selling stockholders identified herein, of up to 143,809,489 shares of our common stock (“Common Stock”), no par value per share, and up to 79,000 shares of our 8.00% Series A Convertible Perpetual Preferred Stock (“Preferred Stock”), no par value per share. The shares offered by the selling stockholders consist of 82,176,842 shares of Common Stock issuable upon conversion of the Preferred Stock and 61,632,647 shares of Common Stock issuable upon exercise of the warrants (“Warrants”) that, along with the Preferred Stock, were issued to the selling stockholders in connection with a private placement (the “Private Placement”) on December 30, 2024. We are not selling any shares of Common Stock or Preferred Stock under this prospectus and will not receive any proceeds from the sale of shares of Common Stock or Preferred Stock by the selling stockholders. The selling stockholders will bear all commissions and discounts, if any, attributable to the sale of the shares.

The selling stockholders may sell the shares of our Common Stock and Preferred Stock offered by this prospectus from time to time on terms to be determined at the time of sale through ordinary brokerage transactions or through any other means described in this prospectus under the caption “Plan of Distribution.” The shares of Common Stock and Preferred Stock may be sold at fixed prices, at market prices prevailing at the time of sale, at prices related to prevailing market price or at negotiated prices.

Our Common Stock is listed on the Nasdaq Global Select Market under the symbol “PGEN”. On August 18, 2025, the last reported sale price of our Common Stock on the Nasdaq Global Select Market was \$2.95 per share. There is no established trading market for our Preferred Stock, and we do not expect a market to develop. Our Preferred Stock is not currently listed on any securities exchange. While there is no established public trading market for our Preferred Stock, we believe the actual offering price in sales of our Preferred Stock by the selling stockholders will be derived from the prevailing market price of our Common Stock at the time of any such sale.

Investing in our securities involves risks. For factors you should consider before investing in our securities, see the section of this prospectus entitled “Risk Factors” on page 3 of this prospectus and any similar sections contained in any applicable prospectus supplement and the documents incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2025.

TABLE OF CONTENTS

	<u>Page</u>
<u>About This Prospectus</u>	<u>ii</u>
<u>Prospectus Summary</u>	<u>1</u>
<u>Risk Factors</u>	<u>3</u>
<u>Special Note Regarding Forward-Looking Statements</u>	<u>7</u>
<u>Use of Proceeds</u>	<u>8</u>
<u>Description of Capital Stock</u>	<u>9</u>
<u>Selling Stockholders</u>	<u>17</u>
<u>Plan of Distribution</u>	<u>19</u>
<u>Legal Matters</u>	<u>21</u>
<u>Experts</u>	<u>21</u>
<u>Where You Can Find More Information</u>	<u>21</u>
<u>Incorporation by Reference</u>	<u>21</u>

ABOUT THIS PROSPECTUS

This prospectus relates to the resale, from time to time, by the selling stockholders identified herein, of up to an aggregate of 143,809,489 shares of our Common Stock and up to an aggregate of 79,000 shares of our Preferred Stock. We are not selling any shares of our Common Stock or Preferred Stock under this prospectus, and we will not receive any proceeds from the sale of shares of Common Stock or Preferred Stock offered hereby by the selling stockholders.

This prospectus is part of a registration statement on Form S-3 that we have filed with the Securities and Exchange Commission, or the SEC, using a shelf registration process. Under this registration statement, the selling stockholders may sell from time to time in one or more offerings the Common Stock and Preferred Stock described in this prospectus. This prospectus omits some of the information contained in the registration statement, and reference is made to the full registration statement for further information with regard to us and the securities being offered by the selling stockholders. Any prospectus supplement may also add, update or change information contained in this prospectus with respect to this offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement, you should rely on the prospectus supplement. Before purchasing any securities, you should carefully read this prospectus and any applicable prospectus supplement, together with the additional information described in the sections of this prospectus entitled “Where You Can Find More Information” and “Incorporation by Reference.”

We have not authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus or any applicable prospectus supplement. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should assume that the information appearing in this prospectus and any applicable prospectus supplement is accurate only as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations, and prospects may have changed since those dates. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

This prospectus, the information incorporated herein by reference, and any prospectus supplement contain or may contain references to trademarks, service marks, and trade names owned by us or other companies. Solely for convenience, trademarks, service marks, and trade names, including logos, artwork, and other visual displays, may appear without the ® or ™ 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, service marks, and trade names. We do not intend our use or display of other companies’ trade names, service marks, or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies. Other trademarks, trade names, and service marks appearing in this prospectus are the property of their respective owners.

When we refer to “we,” “our,” “us,” and the “Company” in this prospectus, we mean Precigen, Inc., unless otherwise specified. When we refer to “you,” we mean the potential holders of the applicable series of securities.

PROSPECTUS SUMMARY

This summary highlights information contained in other parts of this prospectus and in the documents we incorporate by reference. Because it is only a summary, it does not contain all of the information that you should consider before investing in our securities and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus, any applicable free writing prospectus and the documents incorporated by reference herein and therein. You should read all such documents carefully, especially the risk factors and our consolidated financial statements and the related notes included or incorporated by reference herein or therein, before deciding to buy our securities.

Company Overview

We are a dedicated discovery and clinical-stage biopharmaceutical company advancing the next generation of gene and cell therapies with the overall goal of improving outcomes for patients with significant unmet medical needs. We are leveraging our proprietary technology platforms to develop product candidates designed to target urgent and intractable diseases in our core therapeutic areas of immuno-oncology, autoimmune disorders, and infectious diseases. We have developed an extensive pipeline of therapies across multiple indications.

We believe that our array of technology platforms uniquely positions us among other biotechnology companies to advance precision medicine. Precision medicine is the practice of therapeutic product development that takes into account specific genetic variations within populations impacted by a disease to design targeted therapies to improve outcomes for a disease or patient population. Our proprietary and complementary technology platforms provide a strong foundation to realize the core promise of precision medicine by supporting our efforts to construct powerful gene programs to drive efficacy, deliver these programs through viral, non-viral, and microbe-based approaches to drive lower costs, and control gene expression to drive safety. Our therapeutic platforms, including UltraCAR-T, AdenoVerse immunotherapy, and ActoBiotics, are designed to allow us to precisely control the level and physiological location of gene expression and modify biological molecules to control the function and output of living cells to treat underlying disease conditions. We have developed a proprietary electroporation device, UltraPorator, designed to further streamline and ensure the rapid and cost-effective manufacturing of UltraCAR-T therapies. UltraPorator has received Food and Drug Administration (“FDA”) clearance for manufacturing UltraCAR-T cells in clinical trials, and we have dosed patients with UltraCAR-T cells manufactured with UltraPorator in our clinical trials.

Our clinical pipeline includes PRGN-2012 and PRGN-2009, which are based on our AdenoVerse immunotherapy platform; and PRGN-3005, PRGN-3006 and PRGN-3007, which are built on our UltraCAR-T platform. We have completed enrollment in the Phase 1b clinical trial of PRGN-3006. As part of the strategic prioritization of our pipeline, we have paused enrollment in the PRGN-3005 and PRGN-3007 clinical trials.

On August 15, 2025, we announced that the US Food and Drug Administration (FDA) has approved PAPZIMEOS™ (zopapogene imadenovec-drba) for the treatment of adults with recurrent respiratory papillomatosis (RRP).

Our Corporate Information

We are a Virginia corporation formed in 1998 and our principal executive offices are located at 20374 Seneca Meadows Parkway, Germantown, MD 20876, and our telephone number is (301) 556-9900. Our website address is www.precigen.com. Information on or accessible through our website is not incorporated by reference herein and does not form a part of this prospectus.

The Offering

Shares of Common Stock offered by the selling stockholders	143,809,489 shares of Common Stock
Shares of Preferred Stock offered by the selling stockholders	79,000 shares of Preferred Stock
Terms of this offering	The selling stockholders may sell, transfer or otherwise dispose of any or all of the shares of Common Stock and Preferred Stock offered by this prospectus from time to time as described under the caption “Plan of Distribution” in this prospectus.
Use of proceeds	All proceeds from the sale of shares of Common Stock and Preferred Stock offered hereby will be for the account of the selling stockholders. We will not receive any proceeds from the sale of Common Stock or Preferred Stock offered pursuant to this prospectus. See the caption “Use of Proceeds” in this prospectus.
Risk factors	Investing in our securities involves a high degree of risk and purchasers of our securities may lose their entire investment. See the information under the caption “Risk Factors” on page 3 of this prospectus and the other information included elsewhere in this prospectus and incorporated by reference herein for a discussion of factors you should consider before deciding to invest in our securities.
Nasdaq Global Select Market symbol for our Common Stock	PGEN

When we refer to the selling stockholders in this prospectus, we are referring to the selling stockholders identified in this prospectus and, as applicable, their pledgees, assignees, transferees, distributees, donees, and successors-in-interest that may be identified in a prospectus supplement, a free writing prospectus or filings we make with the SEC under the Securities Exchange Act of 1934, as amended, or the Exchange Act, that are incorporated herein by reference.

Selling Stockholders Overview

This prospectus relates to the offering by selling stockholders of up to an aggregate of 143,809,489 shares of our Common Stock and up to an aggregate of 79,000 shares of our Preferred Stock. The Preferred Stock and Warrants that the Common Stock underlying were issued to the selling stockholders on December 30, 2024 in connection with the Private Placement. The selling stockholders agreed pursuant to the terms of the Registration Rights Agreement dated as of December 30, 2024 entered into in connection with the Private Placement to cause us to use reasonable best efforts to register the resale of shares of our Common Stock underlying the Preferred Stock and Warrants and Preferred Stock issued in connection with the Private Placement.

RISK FACTORS

Investment in any securities offered pursuant to this prospectus and any applicable prospectus supplement involves significant risks. You should carefully consider the risk factors incorporated by reference to our annual report on Form 10-K for the year ended December 31, 2024, or the 2024 Annual Report, our quarterly reports on Form 10-Q filed with the SEC on May 14, 2025 and August 12, 2025, and any subsequent reports we file with the SEC after the date of this prospectus, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in any applicable prospectus supplement before making a decision about investing in our securities. 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 business, financial condition, and results of operations. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

Our ability to pay dividends on the Preferred Stock may be limited, and holders of our Preferred Stock will not receive voting rights as a result of dividend arrearages and will otherwise have voting rights only under limited circumstances.

Our payment of dividends on our Preferred Stock in the future will be determined by our board of directors (or an authorized committee thereof) in its sole discretion and will depend on business conditions, our financial condition, earnings and liquidity, and other factors. The agreements governing any future indebtedness of ours may limit our ability to pay dividends on our capital stock, including the Preferred Stock. In addition, we are incorporated under the Virginia Stock Corporation Act (the “VSCA”), which has restrictions prohibiting the payment of cash dividends if, after giving effect to the dividend payment, (1) we would not be able to pay our debts as they become due in the usual course of business or (2) our total assets would be less than the sum of our total liabilities plus the amount that would be required, if we were to be dissolved at the time of the dividend, to satisfy the preferential rights upon dissolution of shareholders whose preferential rights are superior to those receiving the dividend. Therefore, we may be unable to pay dividends on the Preferred Stock. Further, even if we are permitted under our contractual obligations and Virginia law to pay dividends on the Preferred Stock, we may not have sufficient cash to pay dividends in cash on the Preferred Stock.

In the event that our board of directors (or an authorized committee thereof) determines in its sole discretion not to declare dividends on the Preferred Stock, or if dividends on the Preferred Stock are declared but not paid, holders of our Preferred Stock will not receive voting rights, including the right to vote for any members of our board of directors. Except with respect to certain amendments to the terms of the Preferred Stock and in certain other limited circumstances, and except as specifically required by Virginia law, holders of the Preferred Stock will have no voting rights. See “Description of Capital Stock—8.00% Series A Convertible Perpetual Preferred Stock—Voting.” Moreover, if any holder of Preferred Stock converts such Preferred Stock at its option, we will not have an obligation to pay accumulated and unpaid dividends to such holder upon such conversion.

The conversion rate of the Preferred Stock may decrease, and holders of our Preferred Stock may not be able to realize any or all of the benefit of any increases in the market price of shares of our Common Stock.

The number of shares of our Common Stock that a holder of our Preferred Stock would receive upon conversion of our Preferred Stock is not fixed, but instead is subject to decrease if the arithmetic average of the closing sale prices of our Common Stock over the five trading day period ending on, and including, the last trading day of the fiscal quarter immediately preceding the date of such conversion exceeds approximately \$1.125 per share of our Common Stock. If such arithmetic average on any conversion date is equal to or less than approximately \$1.125 per share of Common Stock, each share of Preferred Stock will be convertible into 888.8888 shares of Common Stock per \$1,000 of Stated Value on such conversion date. However, if on any conversion date such arithmetic average exceeds approximately \$1.125 per share of Common Stock, then the conversion rate for purposes of such conversion will be a number of shares of Common Stock per \$1,000 of Stated Value (as defined under “Description of Capital Stock—8.00% Series A Convertible Perpetual Preferred Stock”) equal to \$1,000 divided by such arithmetic average. As a result, holders of Preferred Stock who convert their Preferred Stock on a conversion date on which such arithmetic average exceeds approximately \$1.125 will receive shares of our Common Stock with an aggregate market value upon conversion that exceeds the aggregate Stated Value and liquidation preference of such shares of Preferred Stock only to the extent that the market price of shares of our Common Stock on such date exceeds such

arithmetic average. Accordingly, holders of our Preferred Stock may not be able to realize the benefit of any or all increases in the market price of our Common Stock from the date on which they acquire the shares of Preferred Stock offered hereby. See “Description of Capital Stock—8.00% Series A Convertible Perpetual Preferred Stock—Conversion.”

If we exercise our right to mandatorily convert the Preferred Stock, holders of Preferred Stock may receive consideration with an aggregate market value that is less than the liquidation preference represented by their shares of Preferred Stock.

The Preferred Stock will be convertible into Common Stock at our option at any time on or after December 30, 2027 if the closing sale price per share of our Common Stock equals or exceeds \$4.00 for a period of at least 20 trading days (whether or not consecutive) in a period of 30 consecutive trading days ending on, and including, the trading day immediately preceding the business day on which we issue a press release announcing such mandatory conversion. The mandatory conversion date will be a date that we select and will be no later than ten business days after the date we provide notice of such mandatory conversion to holders of our Preferred Stock. If, on any such mandatory conversion date, (x) the arithmetic average of the closing sale prices of our Common Stock over the five trading day period ending on, and including, the last trading day of the fiscal quarter immediately preceding such mandatory conversion date exceeds approximately \$1.125 and (y) the market price of our shares of Common Stock on such mandatory conversion date is less than such arithmetic average, then holders of our Preferred Stock will receive shares of our Common Stock with an aggregate market value that is less than the aggregate liquidation preference represented by their shares of Preferred Stock. See “Description of Capital Stock—8.00% Series A Convertible Perpetual Preferred Stock—Conversion.”

Our Articles of Incorporation permit our affiliates that own shares of Preferred Stock to vote, and their interests may not be aligned with yours.

Under the terms of our Articles of Incorporation, shares of Preferred Stock owned of record by our affiliates will be considered to be outstanding for purposes of determining whether holders of the required number of shares of Preferred Stock have concurred in any request, demand, authorization, notice, direction, amendment, alteration, repeal, supplement, waiver or consent, and such affiliates will be entitled to vote such shares of Preferred Stock. The interests of our affiliates that own shares of our Preferred Stock may differ from those of holders who acquire the shares of Preferred Stock offered hereby, and such affiliates could use their ownership position in the Preferred Stock (and ability to vote the shares of Preferred Stock) to facilitate actions by us that could have a material adverse effect on the value of the shares of Preferred Stock offered hereby. Moreover, such affiliates could use their equity position in us to facilitate actions by us that could have a material adverse effect on the value of the shares of Preferred Stock offered hereby.

There is no public market for our Preferred Stock.

There is no established public trading market for our Preferred Stock, and we do not expect a market to develop. Our Preferred Stock is not currently listed on any securities exchange or nationally recognized trading system and we may not apply to list it in the future. Without an active market, the liquidity of our Preferred Stock will be limited.

The number of shares being registered for offer and resale is significant in relation to the number of our outstanding shares of Common Stock.

We have filed a registration statement of which this prospectus is a part to register the offer and resale of the shares offered hereunder for sale into the public market by the selling stockholders. Following the conversion of the Preferred Stock and Warrants to Common Stock, the shares being offered hereunder will represent approximately 48.3% of our Common Stock as of August 8, 2025, and if sold in the market all at once or at about the same time, could affect the market price of our Common Stock during the period the registration statement remains effective and could also affect our ability to raise equity capital.

We may issue additional shares of Common Stock or preferred stock in the future, which could cause significant dilution to all stockholders.

Our Amended and Restated Articles of Incorporation, as amended (“Articles of Incorporation”), authorize the issuance of up to 700,000,000 shares of Common Stock and 25,000,000 shares of preferred stock, each with no par value. As of August 8, 2025, we had 297,972,920 shares of Common Stock and 79,000 shares of Preferred Stock

outstanding. However, we may issue additional shares of Common Stock or preferred stock in the future in connection with a financing or an acquisition. Such issuances may not require the approval of our stockholders. In addition, certain of our outstanding rights to purchase additional shares of Common Stock or securities convertible into our Common Stock are subject to some form of anti-dilution protection, which could result in the right to purchase significantly more shares of Common Stock being issued or a reduction in the purchase price for any such shares or both. Any issuance of additional shares of our Common Stock, or equity securities convertible into our Common Stock, including but not limited to, preferred stock, warrants and options, will dilute the percentage ownership interest of all stockholders, may dilute the book value per share of our Common Stock, may negatively impact the market price of our Common Stock, and may also negatively affect stockholders' investments.

The conversion rate of the Preferred Stock may not be adjusted for all dilutive events that may adversely affect the market price of the Preferred Stock or the Common Stock issuable upon conversion of the Preferred Stock.

The conversion rate of the Preferred Stock is subject to adjustment only for stock subdivisions and combinations, stock dividends and certain other transactions specified in our Articles of Incorporation. However, other events, such as grants under employee benefit or incentive plans, offerings of our Common Stock or other securities convertible into our Common Stock (other than those set forth in our Articles of Incorporation) for cash or in connection with acquisitions or third-party tender or exchange offers, which may adversely affect the market price of our Common Stock, may not result in any adjustment. In addition, the terms of the Preferred Stock do not restrict our ability to offer Common Stock or other securities convertible into Common Stock in the future or to engage in other transactions that could dilute our Common Stock. We have no obligation to consider the specific interests of the holders of our Preferred Stock in engaging in any such offering or transaction.

Holders of our Preferred Stock will have no rights with respect to our Common Stock prior to conversion of their Preferred Stock, but such holders may be adversely affected by certain changes made with respect to our Common Stock.

Holders of Preferred Stock will have no rights with respect to our Common Stock, including voting rights, rights to respond to Common Stock tender offers, if any, and rights to receive dividends or other distributions on our Common Stock, if any, prior to any conversion date with respect to a conversion of such Preferred Stock, but any such holder's investment in the Preferred Stock may be negatively affected by these events. Upon conversion, a holder of our Preferred Stock will be entitled to exercise the rights of a holder of Common Stock only as to matters for which the record date occurs on or after the conversion date. For example, in the event that an amendment is proposed to our Articles of Incorporation or our Bylaws (as defined herein) requiring stockholder approval and the record date for determining the stockholders of record entitled to vote on the amendment occurs prior to a conversion date for the Preferred Stock, a holder of such Preferred Stock will not be entitled to vote on the amendment, unless it would materially and adversely affect the rights, preferences, privileges or voting powers of the Preferred Stock, although such holder would nevertheless be subject to any changes in the powers, preferences or rights of our Common Stock.

Our Preferred Stock ranks junior to all of our and our subsidiaries' liabilities, as well as the capital stock of our subsidiaries held by third parties, in the event of a bankruptcy, liquidation, winding-up or dissolution of our or our subsidiaries' assets.

In the event of a bankruptcy, liquidation, winding-up or dissolution, our assets will be available to make payments to holders of our Preferred Stock only after all of our liabilities have been paid. In addition, our Preferred Stock ranks structurally junior to all existing and future liabilities of our subsidiaries, as well as the capital stock of our subsidiaries held by third parties. The rights of holders of our Preferred Stock to participate in the assets of our subsidiaries upon any liquidation or reorganization of any subsidiary will rank junior to the prior claims of that subsidiary's creditors and third-party equity holders. In the event of a bankruptcy, liquidation, winding-up or dissolution, there may not be sufficient assets remaining, after paying our and our subsidiaries' liabilities, to pay any amounts to the holders of our Preferred Stock then outstanding.

Certain rights of the holders of the Preferred Stock could delay or prevent an otherwise beneficial takeover or takeover attempt of us and, therefore, the ability of holders of the Preferred Stock to exercise their rights associated with a potential Fundamental Change.

Certain rights of the holders of the Preferred Stock could make it more difficult or more expensive for a third party to acquire us. For example, the affirmative vote or consent of the holders of at least a majority of the outstanding shares of Preferred Stock, voting as a single class, will be necessary for effecting or validating any consummation of a binding share exchange or reclassification involving the Preferred Stock, or of a merger or consolidation of us with or into another person, unless, in each case: (x) the shares of Preferred Stock remain outstanding and are not amended in any respect (except to the extent required pursuant to the terms of our Articles of Incorporation) or (y) in the case of any such merger or consolidation with respect to which we are not the surviving or resulting entity, the shares of Preferred Stock are converted into or exchanged for preference securities of the surviving or resulting entity or its ultimate parent, and such preference securities have such rights, preferences, privileges and voting powers, taken as a whole, that are not materially less favorable to the holders thereof than the rights, preferences, privileges and voting powers of the Preferred Stock immediately prior to such consummation, taken as a whole. See “Description of Capital Stock—8.00% Series A Convertible Perpetual Preferred Stock—Voting.” In addition, provisions of Virginia law and our Articles of Incorporation and Bylaws could make it more difficult for a third party to acquire control of us or have the effect of discouraging a third party from attempting to acquire control of us.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, the applicable prospectus supplement and any free writing prospectus may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, which statements involve substantial risks and uncertainties. All statements, other than statements of historical facts, included in this prospectus, including statements regarding our strategy; future events, including their outcome or timing; future operations; future financial position; future revenue; projected costs; prospects; plans; objectives of management; and expected market growth, are forward-looking statements. The words “aim”, “anticipate”, “assume”, “believe”, “continue”, “could”, “due”, “estimate”, “expect”, “intend”, “may”, “plan”, “objective”, “positioned”, “potential”, “predict”, “project”, “seek”, “should”, “target”, “will”, “would”, and the negatives of these terms or similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These statements may relate to, among other things: (i) the timeliness of regulatory approvals; (ii) our strategy and overall approach to our business model, our efforts to realign our business, and our ability to exercise more control and ownership over the development process and commercialization path; (iii) our ability to successfully enter new markets or develop additional product candidates, including the expected timing and results of investigational studies and preclinical and clinical trials, whether with our collaborators or independently; (iv) our ability to consistently manufacture our product candidates or, our products, if approved, on a timely basis or to establish agreements with third-party manufacturers; (v) our ability to successfully enter into optimal strategic relationships directly or with our subsidiaries and operating companies that we may form in the future; (vi) actual or anticipated variations in our operating results; (vii) actual or anticipated fluctuations in competitors' or collaborators' operating results or changes in their respective growth rates; (viii) our cash position; (ix) market conditions in our industry; (x) our expectations regarding the size of the patient populations amenable to treatment with our product candidates; (xi) the volatility of our stock price; (xii) the ability, and the ability of our collaborators, to protect our intellectual property and other proprietary rights and technologies; (xiii) outcomes of pending and future litigation; (xiv) the rate and degree of market acceptance of any products developed by us, our subsidiaries, or our potential collaborators, and competition from existing technologies and products or new technologies and products that may emerge; (xv) our ability to retain and recruit key personnel; (xvi) expectations related to the use of proceeds from public offerings and other financing efforts; (xvii) estimates regarding expenses, future revenue, capital requirements, and needs for additional financing; (xviii) our substantial doubt about our ability to continue as a going concern; and (xix) our timeline to commercialization of our product candidates.

These statements are based on management's current expectations, estimates, forecasts and projections about our business and industry, are not guarantees of future performance and involve known and unknown risks, uncertainties, and other factors that are in some cases beyond our control and that may cause our or our industry's actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. We discuss many of these risks in greater detail in the section of this prospectus entitled “Risk Factors” and elsewhere in this prospectus and any related free writing prospectus, and in any other documents incorporated herein or therein (including in our most recent annual report on Form 10-K, subsequent quarterly reports on Form 10-Q, and other filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act). You should read these factors and the other cautionary statements made in this prospectus, the applicable prospectus supplement, and any free writing prospectus as being applicable to all related forward-looking statements wherever they appear herein or therein. If one or more of these factors materialize, or if any underlying assumptions prove incorrect, our actual results, levels of activity, performance, or achievements may vary materially from any future results, activity, performance, or achievements expressed or implied by these forward-looking statements. We caution readers not to place undue reliance on any forward-looking statements made by us, which speak only as of the date they were made. We undertake no obligation to publicly update any forward-looking statements after the date of this prospectus, whether as a result of new information, future events or otherwise, except as required by law.

You should read this prospectus, the applicable prospectus supplement and the documents that we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by the foregoing cautionary statements.

USE OF PROCEEDS

All shares of our Common Stock and Preferred Stock offered by this prospectus are being registered for the account of the selling stockholders. We will not receive any of the proceeds from the sale of these shares.

DESCRIPTION OF CAPITAL STOCK

The following description summarizes certain information about our capital stock. The summary does not purport to be complete and is subject, and qualified in its entirety by reference, to our Articles of Incorporation, and our Amended and Restated Bylaws (“Bylaws”), each of which is incorporated by reference as an exhibit to the registration statement of which this prospectus is a part, and the applicable provisions of Virginia law.

General

Our authorized capital stock consists of 700,000,000 shares of Common Stock, no par value per share, and 25,000,000 shares of preferred stock, no par value per share. As of August 8, 2025, we had 297,972,920 shares of Common Stock outstanding and held of record by approximately 272 shareholders, and 79,000 shares of preferred stock outstanding and held of record by 5 shareholders. The actual number of shareholders is greater than this number of record holders and includes shareholders who are beneficial owners but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include shareholders whose shares may be held in trust by other entities. All outstanding shares of Common Stock and preferred stock are fully paid and nonassessable.

Common Stock

Voting rights; Dividends; Liquidation

Holders of our Common Stock are entitled to:

- cast one vote for each share on all matters submitted to a vote of our shareholders, including the election of directors. Holders of our Common Stock do not have cumulative voting rights in the election of directors;
- receive dividends if and when dividends are declared by our board of directors out of assets legally available for the payment of dividends, subject to preferential rights of outstanding shares of Preferred Stock; and
- in the event of our liquidation, dissolution or winding up, whether voluntary or involuntary, after payment of our debts and other liabilities and making provision for the holders of outstanding shares of Preferred Stock, to share equally and ratably in the remainder of our assets.

Other Rights and Preferences

Holders of our Common Stock have no preemptive, redemption, conversion, or subscription rights and there are no sinking fund provisions applicable to our Common Stock. The rights, powers, preferences, and privileges of holders of Common Stock are subject to, and may be impaired by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Preferred Stock

Our board has the authority to designate and issue from time to time one or more series of preferred stock without shareholder approval. Our board may fix and determine the preferences, limitations, and relative rights of each series of preferred stock issued. Because our board has the power to establish the preferences and rights of each series of preferred stock, it may afford the holders of any series of preferred stock preferences and rights, voting or otherwise, senior to the rights of holders of our Common Stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock upon the rights of holders of Common Stock until our board determines the specific rights of the holders of preferred stock. However, the effects might include:

- restricting dividends on our Common Stock;
- diluting the voting power of our Common Stock;
- impairing liquidation rights of our Common Stock; or
- delaying or preventing a change in control of us without further action by our shareholders.

8.00% Series A Convertible Perpetual Preferred Stock

As used herein, “Stated Value” means an amount per share of Preferred Stock equal to \$1,000, as increased on each of January 15, 2026 and January 15, 2027 (each, a “PIK Dividend Payment Date”) by the amount of dividends per share of Preferred Stock calculated at a rate per annum of 8.00% per share of Preferred Stock (the “Dividend Rate”) for the period from, and including, the immediately preceding PIK Dividend Payment Date (or, if there is no immediately preceding PIK Dividend Payment Date, from, and including, December 30, 2024) to, but excluding, such PIK Dividend Payment Date (such amount, the “Accumulated PIK Dividend Amount”), and as decreased by any payment of any Accumulated PIK Dividend Amount that we elect to make, as described under “—Dividends,” below.

As used herein, “Accumulated Dividends” means, with respect to any share of Preferred Stock, as of any date, the aggregate accumulated and unpaid dividends (excluding any Accumulated PIK Dividend Amount by which the Stated Value has been increased on a PIK Dividend Payment Date as described under “—Dividends,” below) on such share from December 30, 2024 until such date.

Dividends

Except as described in the second immediately succeeding sentence, holders of shares of Preferred Stock will be entitled to receive, when, as and if declared by our board of directors (or an authorized committee thereof) out of our funds legally available for payment, cumulative dividends in cash at the Dividend Rate.

Dividends on the Preferred Stock will be payable annually in arrears at the Dividend Rate, and will accumulate, whether or not earned or declared, from the most recent date to which dividends have been paid or added to the Stated Value, as the case may be, or, if no dividends have been paid or added to the Stated Value, from December 30, 2024, and will be paid in cash. However, notwithstanding the immediately preceding sentence, on each PIK Dividend Payment Date, the Stated Value will automatically be increased by the Accumulated PIK Dividend Amount, and holders of shares of Preferred Stock will not be entitled to receive dividends in cash for accumulated dividends so added to the Stated Value except upon (1) a payment made at our election as described in the second immediately succeeding sentence, (2) an optional redemption of the Preferred Stock (as described under “—Optional redemption,” below) (3) a repurchase of the Preferred Stock upon a Fundamental Change (as described under “—Repurchase upon a fundamental change,” below) or (4) our liquidation, winding-up or dissolution (as described under “—Liquidation rights,” below). Dividends other than dividends subject to the exception described in the immediately preceding sentence will be payable in arrears on January 15 of each year, commencing on January 15, 2026, to the holders of record of Preferred Stock as they appear on our stock register at the close of business on the January 1 immediately preceding each January 15.

Accumulations of dividends on shares of Preferred Stock for any past dividend periods (including the Accumulated PIK Dividend Amount) may be declared and paid at any time to holders of record of Preferred Stock not more than 40 nor less than 20 calendar days immediately preceding any January 15 and will not bear interest. We will provide not less than 20 calendar days’ notice prior to the date of any such payment.

No dividend will be declared or paid upon, or any sum set apart for the payment of dividends upon, any outstanding share of the Preferred Stock with respect to any dividend period unless all dividends for all preceding dividend periods (other than dividend periods preceding a PIK Dividend Payment Date) have been declared and paid, or declared and a sufficient sum has been set apart for the payment of such dividend, upon all outstanding shares of Preferred Stock.

Except as described in the two immediately succeeding paragraphs, no cash dividends or other distributions may be declared, made or paid, or set apart for payment upon, any Parity Stock or Junior Stock at any time after the last PIK Dividend Payment Date unless all Accumulated Dividends will have been or contemporaneously are declared and paid, or are declared and a sum sufficient for the payment thereof is set apart for such payment, on the Preferred Stock and any Parity Stock for all dividend payment periods ending on or prior to the date of such declaration, payment, redemption, purchase or acquisition.

Notwithstanding the immediately preceding paragraph, if full dividends have not been paid on the Preferred Stock and any Parity Stock, dividends may be declared and paid on the Preferred Stock and such Parity Stock so long as the dividends are declared and paid pro rata so that the amounts of dividends declared per share on the Preferred Stock and such Parity Stock will in all cases bear to each other the same ratio that accumulated and unpaid

dividends per share on the shares of Preferred Stock (excluding, for the avoidance of doubt, accumulated dividends for which the Stated Value has been increased on a PIK Dividend Payment Date as described above) and such Parity Stock bear to each other at the time of declaration.

In addition, the limitations set forth in the second immediately preceding paragraph will not apply to (1) any dividend or distribution payable in shares of Common Stock or other Junior Stock; (2) any dividends or distributions of rights in connection with a shareholders' rights plan or any redemption or repurchase of rights pursuant to any shareholders' rights plan; or (3) the exchange or conversion of Junior Stock for or into other Junior Stock or of Parity Stock for or into other Parity Stock (with the same or lesser aggregate liquidation preference) or Junior Stock and, in each case, the payment of cash solely in lieu of fractional shares.

Holders of shares of Preferred Stock will not be entitled to any dividend in excess of full cumulative dividends, except as set forth in our Articles of Incorporation.

Holders of shares of Preferred Stock at the close of business on any January 1 will be entitled to receive the dividend payment on those shares on the corresponding January 15 notwithstanding the conversion of such shares following such January 1. Shares of Preferred Stock surrendered for conversion during the period from the close of business on any January 1 to the open of business on the immediately following January 15 must be accompanied by funds equal to the amount of dividends (if any) payable on the shares of Preferred Stock so converted on such January 15 to holders of record on such January 1. However, no such payment is necessary if we have specified a redemption date that is after any January 1 and on or prior to the business day immediately following the next January 15. Except as described in the second immediately preceding sentence and in the case of certain mandatory conversions, we will not make any payment or allowance for unpaid dividends, whether or not in arrears, on converted shares of Preferred Stock or for dividends on the shares of Common Stock issued upon conversion.

Optional redemption

The Preferred Stock is redeemable, in whole or in part, for cash at our option at any time. If we exercise our right to redeem all or any whole number of shares of the Preferred Stock, we will fix a date for redemption and provide notice not less than 30 days prior to such redemption date to each holder of Preferred Stock at its last address as the same appears on our stock register. The redemption price will be an amount in cash per share of Preferred Stock equal to the Stated Value thereof, plus Accumulated Dividends to, but excluding, the redemption date. The redemption date must be a business day.

Repurchase upon a fundamental change

If a Fundamental Change occurs at any time, each holder of Preferred Stock will have the right, at such holder's option, to require us to repurchase for cash all of such holder's shares of Preferred Stock, or any portion thereof, on the date specified by us that is not less than 15 scheduled trading days nor more than 30 scheduled trading days following the date we provide notice of such fundamental change to all holders of the Preferred Stock at a repurchase price equal to the Stated Value thereof, plus Accumulated Dividends thereon to, but excluding, such repurchase date (unless such repurchase date falls after any January 1 but on or prior to the immediately succeeding January 15, in which case we will instead pay the full amount of Accumulated Dividends to holders of record as of such January 1, and the repurchase price we pay will be equal to the Stated Value of the Preferred Stock to be repurchased).

If we do not have legally available funds sufficient to pay the repurchase price upon a Fundamental Change in cash, we will, as soon as we are legally able to do so, pay such unpaid amount in cash.

A "Fundamental Change" will be deemed to have occurred at any time if any of the following occurs: (i) a "person" or "group" within the meaning of Section 13(d) of the Exchange Act, other than us, our subsidiaries, our employee benefit plans and those of our subsidiaries, the "Permitted Holders" (as defined below) and any group that includes the Permitted Holders, files a Schedule TO (or any successor schedule, form or report) or any other schedule, form or report under the Exchange Act that discloses that such person or group has become the direct or indirect "beneficial owner," as defined in Rule 13d-3 under the Exchange Act, of our common equity representing more than 50% of the voting power of our common equity; (ii) the consummation of: (A) any recapitalization, reclassification or change of our Common Stock (other than changes resulting from a subdivision or combination) as a result of which our Common Stock would be converted into, or exchanged for, cash, securities or other property or assets, (B) any share exchange, consolidation or merger of us pursuant to which our Common Stock will be

converted into cash, securities or other property or assets, (C) any sale, lease or other transfer in one transaction or a series of transactions of all or substantially all of the consolidated assets of us and our subsidiaries, taken as a whole, to any person other than one of our subsidiaries, or (D) any sale of assets of us or our subsidiaries in any single or numerous transaction(s) together representing more than 35% of the value of our consolidated assets and those of our subsidiaries, taken as a whole, as determined in good faith by our board of directors (or an authorized committee thereof), to any person other than one of our subsidiaries; or (iii) our shareholders approve any plan or proposal for our liquidation or dissolution. However, a transaction or series of transactions that is solely for the purpose of re-domiciling or otherwise changing our jurisdiction of incorporation or formation will not constitute a “Fundamental Change.”

As used herein, “Permitted Holder” means (i) Randal J. Kirk, (ii) the spouse and lineal descendants and spouses of lineal descendants of Randal J. Kirk, (iii) the estates or legal representatives of any person named in clauses (i) or (ii), (iv) trusts established for the benefit of any person named in clauses (i) or (ii) and (v) any entity solely owned or controlled, directly or indirectly, by one or more of the foregoing.

Voting rights

Holders of the Preferred Stock will not have voting rights except those described below and as specifically required by the VSCA or by our Articles of Incorporation. So long as any shares of Preferred Stock are outstanding, in addition to any other vote or consent of shareholders required by law or by our Articles of Incorporation, the affirmative vote or consent of the holders of at least a majority of the outstanding shares of Preferred Stock, voting as a single class, given in person or by proxy, either in writing without a meeting or by vote at any meeting called for the purpose, will be necessary for effecting or validating: (i) any amendment or alteration of our Articles of Incorporation so as to authorize or create, or increase the authorized amount of, any class or series of our capital stock or series of preferred stock established after December 30, 2024, the terms of which expressly provide that such class or series will rank (x) senior to the Preferred Stock as to dividend rights or rights upon the liquidation, winding-up or dissolution of us or (y) on a parity with the Preferred Stock as to dividend rights and rights upon the liquidation, winding-up or dissolution of us (“Parity Stock”); (ii) any amendment, alteration or repeal of any provision of our Articles of Incorporation so as to materially and adversely affect the rights, preferences, privileges or voting powers of the Preferred Stock; or (iii) any consummation of a binding share exchange or reclassification involving the Preferred Stock, or of a merger or consolidation of us with or into another person, unless, in each case: (x) the shares of Preferred Stock remain outstanding and are not amended in any respect (except to the extent required pursuant to the terms of our Articles of Incorporation) or (y) in the case of any such merger or consolidation with respect to which we are not the surviving or resulting entity, the shares of Preferred Stock are converted into or exchanged for preference securities of the surviving or resulting entity or its ultimate parent, and such preference securities have such rights, preferences, privileges and voting powers, taken as a whole, that are not materially less favorable to the holders thereof than the rights, preferences, privileges and voting powers of the Preferred Stock immediately prior to such consummation, taken as a whole. Any increase in the amount of our authorized Preferred Stock or the creation or issuance of any shares of (A) Parity Stock or (B) any class of our Common Stock or any other class of our capital stock or series of preferred stock established after December 30, 2024, the terms of which do not expressly provide that such class or series ranks senior to or on a parity with the Preferred Stock as to dividend rights or rights upon the liquidation, winding-up or dissolution us (“Junior Stock”), or any increase in the amount of authorized shares of Parity Stock or Junior Stock, will not be deemed to materially and adversely affect the rights, preferences, privileges or voting powers of holders of shares of Preferred Stock specified herein and will not require the affirmative vote or consent of holders of the Preferred Stock.

Without the consent of the holders of the Preferred Stock, we may amend, alter, supplement or repeal any terms of the Preferred Stock by amending or supplementing our Articles of Incorporation or any stock certificate representing shares of the Preferred Stock: (i) to cure any ambiguity, omission, inconsistency or mistake in any such agreement or instrument; or (ii) to make any other change that does not adversely affect the rights, preferences, privileges or voting powers of any holder in any material respect (other than any holder that consents to such change).

Liquidation rights

In the event of any liquidation, winding-up or dissolution of us, whether voluntary or involuntary, each holder of shares of Preferred Stock will be entitled to receive and to be paid out of our assets available for distribution to shareholders the Stated Value plus Accumulated Dividends to the date fixed for liquidation, winding-up or

dissolution in preference to the holders of, and before any payment or distribution is made on, any Junior Stock. Neither the sale (for cash, shares of stock, securities or other consideration) of all or substantially all of our assets or our business (other than in connection with our liquidation, winding-up or dissolution) nor our merger or consolidation into or with any other person will be deemed to be a liquidation, winding-up or dissolution, voluntary or involuntary, for these purposes. After the payment to the holders of the shares of Preferred Stock of full preferential amounts described in this paragraph, the holders of Preferred Stock as such will have no right or claim to any of our remaining assets.

In the event our assets available for distribution to the holders of shares of Preferred Stock and holders of shares of any Parity Stock, upon any liquidation, winding-up or dissolution of us, whether voluntary or involuntary, are insufficient to pay in full all amounts to which such holders of Preferred Stock are entitled under our Articles of Incorporation, no such distribution will be made on account of any shares of Parity Stock upon such liquidation, dissolution or winding-up unless proportionate distributable amounts are paid on account of the shares of Preferred Stock, equally and ratably, in proportion to the full distributable amounts for which holders of all Preferred Stock and of any Parity Stock are entitled upon such liquidation, winding-up or dissolution.

Conversion

A holder of Preferred Stock may convert any or all of such holder's shares of Preferred Stock into shares of our Common Stock at a conversion rate of 888.8888 shares of Common Stock per \$1,000 of Stated Value of each share of Preferred Stock being converted (equivalent to a conversion price of approximately \$1.125 per share of Common Stock), provided, however, that if, as of the conversion date for any conversion, the arithmetic average of the closing sale prices of our Common Stock for each trading day during the period of five consecutive trading days ending on, and including, the last trading day of the immediately preceding fiscal quarter exceeds the conversion price otherwise in effect on such conversion date, then the conversion rate for purposes of such conversion for each \$1,000 of Stated Value will be deemed to be equal to \$1,000 divided by such arithmetic average. The conversion rate is also subject to customary anti-dilution adjustments as specified in our Articles of Incorporation.

Immediately prior to the close of business on the conversion date with respect to a conversion, a converting holder of Preferred Stock will be deemed to be the holder of record of our Common Stock issuable upon conversion of such holder's Preferred Stock notwithstanding that our share register will then be closed or that certificates representing such Common Stock will not then be actually delivered to such holder.

In the case of: (i) any recapitalization, reclassification or change of our Common Stock (other than changes resulting from a subdivision or combination), (ii) any consolidation, merger or combination involving us, (iii) any sale, lease or other transfer to a third party of our consolidated assets and those of our subsidiaries substantially as an entirety, or (iv) any statutory share exchange, in each case, as a result of which our Common Stock is converted into, or exchanged for, stock, other securities, other property or assets (including cash or any combination thereof) (any such transaction or event, a "Reorganization Event"), then, at and after the effective time of such Reorganization Event, the right to convert each share of Preferred Stock will be changed into a right to convert such share into the kind and amount of shares of stock, other securities or other property or assets (including cash or any combination thereof) that a holder of a number of shares of Common Stock equal to the conversion rate of the Preferred Stock immediately prior to such Reorganization Event would have owned or been entitled to receive upon such Reorganization Event (such stock, securities or other property or assets, the "Reference Property," with each "unit of Reference Property" meaning the kind and amount of Reference Property that a holder of one share of Common Stock is entitled to receive in the relevant Reorganization Event). If the Reorganization Event causes the Common Stock to be converted into, or exchanged for, the right to receive more than a single type of consideration (determined based in part upon any form of shareholders election), then the Reference Property into which the Preferred Stock will be convertible will be deemed to be the weighted average of the types and amounts of consideration received by the holders of Common Stock that affirmatively make such an election. We will notify holders of the Preferred Stock of such weighted average as soon as practicable after such determination is made. We will not become a party to any Reorganization Event unless its terms are consistent with the provisions described above. None of the foregoing will affect the right of a holder of Preferred Stock to convert its Preferred Stock into shares of our Common Stock prior to the effective time of such Reorganization Event. Notwithstanding the anti-dilution adjustments to the conversion rate of the Preferred Stock contained in our Articles of Incorporation, no adjustment to the conversion rate will be made for any Reorganization Event to the extent stock, securities or other property or assets become the Reference Property receivable upon conversion of Preferred Stock. If, in connection with any Reorganization Event, the relevant Reference Property is comprised, in whole or in part, of

common equity, we will provide, by amendment to our Articles of Incorporation effective upon any such Reorganization Event, for anti-dilution and other adjustments with respect to such common equity that will be as nearly equivalent as is possible to the adjustments provided for in our Articles of Incorporation. The provisions described in this paragraph will apply to successive Reorganization Events.

At any time on or after December 30, 2027, we will have the right, at our option, to give notice of our election to cause all outstanding shares of Preferred Stock to be mandatorily converted into shares of Common Stock at the conversion rate in effect on the date of such mandatory conversion. We may exercise our right to cause a mandatory conversion only if the closing sale price of the Common Stock equals or exceeds \$4.00 (subject to customary adjustments inversely proportional to the conversion rate) for at least 20 trading days (whether or not consecutive) in a period of 30 consecutive trading days ending on, and including, the trading day immediately preceding the business day on which we issue a press release announcing the mandatory conversion. We may not authorize, issue a press release or give notice of any mandatory conversion unless, prior to giving the mandatory conversion notice, all Accumulated Dividends on the Preferred Stock (whether or not declared) for all dividend periods ended prior to the date of such mandatory conversion notice will have been paid. Upon any mandatory conversion of any outstanding share of Preferred Stock, we will pay in cash on the related settlement date in respect of such mandatory conversion to the holder thereof all Accumulated Dividends thereon as of the related mandatory conversion date, whether or not declared by our board of directors (or an authorized committee thereof) (the “Additional Conversion Amount”), provided that if upon the conversion of such shares of Preferred Stock we do not have sufficient funds legally available to pay the Additional Conversion Amount, then we will pay the portion of the Additional Conversion Amount that we are so legally able to pay on the related settlement date and will pay such excess amount as soon as we have funds legally available therefor, and the amount of such unpaid dividends will accrue interest at a rate equal to the Dividend Rate that would then be applicable in the absence of the mandatory conversion until paid.

Certificated securities

The shares of our Preferred Stock offered hereby were issued in physical, certificated form and are transferable only on the books and records of the registrar and transfer agent for our Preferred Stock in accordance with the procedures for transfer and exchange set forth in our Articles of Incorporation.

Anti-Takeover Effects of Provisions of our Articles of Incorporation and Bylaws and of Virginia Law

Our Articles of Incorporation, Bylaws, and Virginia law contain provisions that may have the effect of impeding the acquisition of control of us by means of a tender offer, a proxy contest, open market purchases, or otherwise in a transaction not approved by our board of directors. These provisions are designed to reduce, or have the effect of reducing, our vulnerability to coercive takeover practices and inadequate takeover bids. The existence of these provisions could limit the price that investors might otherwise pay in the future for shares of Common Stock. In addition, these provisions make it more difficult for our shareholders to remove our board of directors or management, should they choose to do so.

Articles of Incorporation and Bylaws

Undesignated preferred stock. Our Articles of Incorporation authorize our board to establish one or more series of preferred stock and to determine, with respect to any series of preferred stock, the preferences, rights, and other terms of such series. See “Preferred Stock” above for additional information. Under this authority, our board could create and issue a series of preferred stock with rights, preferences or restrictions that have the effect of discriminating against an existing or prospective holder of our capital stock as a result of such holder beneficially owning or commencing a tender offer for a substantial amount of our Common Stock. One of the effects of authorized but unissued and unreserved shares of preferred stock may be to render it more difficult for, or to discourage an attempt by, a potential acquirer to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, and thereby protect the continuity of our management. The issuance of shares of preferred stock may have the effect of delaying, deferring or preventing a change in control of our Company without any action by our shareholders.

Qualification and election of directors. Our Bylaws provide that to be eligible to be a nominee for election to our board of directors, a person must submit a written questionnaire regarding his or her background and qualifications and must agree to other representations as set forth in our Bylaws. In addition, we have adopted a

director resignation policy. Our Bylaws provide that, in uncontested director elections (i.e., an election where the number of nominees is not greater than the number of directors to be elected), a nominee for director will be elected to the board of directors if the votes cast for such nominee's election exceed the votes cast against such nominee's election. However, directors will be elected by a plurality of the votes cast at any meeting of the shareholders for which (i) the Secretary receives a notice that a shareholder has nominated a person for election to the board of directors in compliance with the advance notice requirements for shareholder nominees for director set forth in the Bylaws, and (ii) such nomination has not been withdrawn by such shareholder on or prior to the 10th day preceding the date we first mail the notice of meeting for such meeting to the shareholders (i.e., if there is a contested director election). If directors are to be elected by a plurality of the votes cast, the shareholders may withhold votes, but will not be permitted to vote against a nominee. Our Corporate Governance Guidelines provide that any nominee for director in an uncontested election who receives a greater number of shareholder votes cast against his or her election than votes for his or her election must promptly tender his or her resignation to the board of directors for consideration. The Nominating and Governance Committee will then evaluate the best interests of the Company and will recommend to the board of directors whether to accept or reject the tendered resignation. Following the board of directors' receipt of this recommendation and determination as to whether to accept the resignation, we will disclose the board of directors' decision and an explanation of how the decision was reached.

Board vacancies; removal. Our Articles of Incorporation provide that any vacancy occurring on our board of directors may be filled by a majority of directors then in office, even if less than a quorum.

Special meetings of shareholders. Our Bylaws provide that a special meeting may be called by a vote of shareholders representing in the aggregate not less than 25 percent of the total number of shares of stock entitled to vote on the matter to be brought before the proposed special meeting, and that shareholders may only conduct business at special meetings of shareholders that was specified in the notice of the meeting.

Advance notification of shareholder nominations and proposals. Our Bylaws establish advance notice procedures with respect to shareholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of our board.

Exclusive forum provision. Our Bylaws provide that unless we consent in writing to the selection of an alternative forum, the United States District Court for the Eastern District of Virginia, Alexandria Division, or in the event that court lacks subject matter jurisdiction to hear such action, the Circuit Court of the County of Fairfax, Virginia, will be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action for breach of duty to the Company or our shareholders by any current or former officer or other employee or agent or director of the Company, (iii) any action against the Company or any current or former officer or other employee or agent or director of the Company arising pursuant to any provision of the VSCA (as it may be amended from time to time) or our Articles of Incorporation or our Bylaws (as either may be amended from time to time), or (iv) any action against the Company or any current or former officer or other employee or agent or director of the Company governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring or holding any interest in shares of our capital stock will be deemed to have notice of and consented to the forum provisions in our Bylaws. It is possible that a court of law could rule that the choice of forum provision contained in our Bylaws is inapplicable or unenforceable if it is challenged in a proceeding or otherwise.

Virginia Anti-takeover Statutes

Affiliated transactions statute. The VSCA contains provisions governing affiliated transactions. In general, these provisions prohibit a Virginia corporation from engaging in affiliated transactions (as defined in the VSCA) with any interested shareholder, defined to include any holder of more than 10 percent of any class of its outstanding voting shares, unless a majority of (but not fewer than two) disinterested directors of the corporation and the holders of two-thirds of the voting shares, other than the shares beneficially owned by the interested shareholder, approve the affiliated transaction, subject to certain exceptions.

Affiliated transactions subject to this approval requirement include mergers, share exchanges, material dispositions of corporate assets not in the ordinary course of business, any dissolution of the corporation proposed by or on behalf of an interested shareholder or any reclassification, including reverse stock splits, recapitalizations or mergers of the corporation with its subsidiaries, which increases the percentage of voting shares owned beneficially by an interested shareholder by more than five percent.

Virginia law permits a corporation to exempt itself from this statutory provision by placing a statement to that effect in its Articles of Incorporation. Our Articles of Incorporation do not specifically address the Virginia statute regarding affiliated transactions; therefore, we are subject to this provision.

Control share acquisitions statute. Virginia law also contains provisions relating to control share acquisitions, which are transactions causing the voting strength of any person acquiring beneficial ownership of shares of a Virginia public corporation to meet or exceed certain threshold percentages (20 percent, 33 1/3 percent or 50 percent) of the total votes entitled to be cast for the election of directors. Shares acquired in a control share acquisition have no voting rights unless:

- the voting rights are granted by a majority vote of all outstanding shares entitled to vote in the election of directors, other than those held by the acquiring person or any officer or employee director of the corporation; or
- the Articles of Incorporation or Bylaws of the Company provide that these Virginia law provisions do not apply to acquisitions of its shares.

The acquiring person may require that a special meeting of the shareholders be held within 50 days of the corporation's receipt of the acquiring person's request to consider the grant of voting rights to the shares acquired in the control share acquisition. If voting rights are not granted and the Company's Articles of Incorporation or Bylaws permit, the acquiring person's shares may be repurchased by the corporation, at its option, at a price per share equal to the acquiring person's cost. Virginia law grants dissenters' rights to any shareholder who objects to a control share acquisition that is approved by a vote of disinterested shareholders and that gives the acquiring person control of a majority of the corporation's voting shares.

Our Articles of Incorporation provide that the statutory provisions governing control share acquisitions do not apply to our Company; therefore, we are not subject to this provision.

Authorized but Unissued Shares

The authorized but unissued shares of Common Stock and preferred stock are available for future issuance without shareholder approval, subject to any limitations imposed by the Nasdaq Stock Market LLC listing rules. These additional shares may be used for a variety of corporate finance transactions, acquisitions, and employee benefit plans. The existence of authorized but unissued and unreserved Common Stock and preferred stock could make it more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger, or otherwise.

Listing on the Nasdaq Global Select Market

Our Common Stock is listed on the Nasdaq Global Select Market under the symbol "PGEN". Our Preferred Stock is not currently listed on any securities exchange.

Transfer Agent and Registrar

The transfer agent and registrar for our Common Stock and our Preferred Stock is Equiniti Trust Company, LLC.

SELLING STOCKHOLDERS

This prospectus relates to the offering by certain of our stockholders, whom we refer to as the “selling stockholders,” of up to an aggregate of 143,809,489 shares of our Common Stock and up to an aggregate of 79,000 shares of our Preferred Stock. The Preferred Stock and Warrants that the Common Stock underlying were issued on December 30, 2024 in connection with the Private Placement with the selling stockholders listed in the table below. The selling stockholders agreed pursuant to the terms of the Registration Rights Agreement dated as of December 30, 2024 to cause us to use reasonable best efforts to register the resale of shares of our Preferred Stock and Warrants that the Common Stock underlying issued in connection with the Private Placement.

The following table sets forth certain information with respect to each selling stockholder, including (i) the shares of our Common Stock and Preferred Stock beneficially owned by the selling stockholders prior to this offering, (ii) the number of shares being offered by the selling stockholders pursuant to this prospectus, and (iii) the selling stockholders’ beneficial ownership after completion of this offering, assuming that all of the shares covered hereby (but none of the other shares, if any, held by the selling stockholders) are sold to third parties.

The table is based on information supplied to us by the selling stockholders, with beneficial ownership and percentage ownership determined in accordance with the rules and regulations of the SEC and including voting or investment power with respect to shares of stock. This information does not necessarily indicate beneficial ownership for any other purpose. The percentage of beneficial ownership of Common Stock prior to this offering is based on 297,972,920 shares outstanding on August 8, 2025. The percentage of beneficial ownership of Common Stock after this offering is based on 441,782,409 shares outstanding, assuming the issuance of 143,809,489 shares of Common Stock underlying the Preferred Stock and Warrants. The percentage of beneficial ownership of Preferred Stock prior to and after this offering is based on 79,000 shares of Preferred Stock outstanding on August 8, 2025.

The registration for resale of these shares of Common Stock and Preferred Stock does not mean that the selling stockholders will sell or otherwise dispose of all or any of those securities. The selling stockholders may sell or otherwise dispose of all, a portion or none of such shares from time to time. We do not know the number of shares, if any, that will be offered for sale or other disposition by any of the selling stockholders under this prospectus. Furthermore, the selling stockholders may have sold, transferred or disposed of the shares of Common Stock and Preferred Stock covered hereby in transactions exempt from the registration requirements of the Securities Act since the date on which we filed this prospectus. In addition, the selling stockholders may have transferred the shares of Common Stock and Preferred Stock by other means not described in this prospectus.

When we refer to the selling stockholders in this prospectus, we are referring to the selling stockholders identified in this prospectus and, as applicable, their pledgees, assignees, transferees, distributees, donees, and other successors-in-interest that may be identified in a prospectus supplement, a free writing prospectus or filings we make with the SEC under the Exchange Act that are incorporated herein by reference.

Selling Stockholder(1)	Shares of Common Stock Beneficially Owned Prior to This Offering(2)(3)		Shares of Preferred Stock Owned Prior to This Offering		Shares of Common Stock to be Sold in the Offering(3)	Shares of Preferred Stock to be Sold in the Offering(3)	Shares of Common Stock to be Owned After This Offering		Shares of Preferred Stock to be Owned After This Offering	
	Number	Percentage	Number	Percentage			Number	Percentage	Number	Percentage
RJ Kirk and Affiliates(4)	162,753,018	47.3%	25,000	31.6%	25,000	25,000	117,243,687	39.3%	—	—
Patient Capital Management, LLC(5)	63,598,447	18.4%	26,000	32.9%	26,000	26,000	16,268,741	5.5%	—	—
William H. Miller III Living Trust dated April 17, 2017, as amended and restated	45,509,331	13.2%	25,000	31.6%	25,000	25,000	—	—	—	—
Harold Levy	5,140,748	1.7%	2,000	2.5%	2,000	2,000	1,500,000	*	—	—
Iridian Asset Management	6,099,036	2.0%	1,000	1.3%	1,000	1,000	4,278,662	1.4%	—	—

* Less than one percent.

- (1) This table and the information in the notes below are based upon information supplied by the selling stockholders.
- (2) The number of shares of Common Stock beneficially owned prior to this offering consists of outstanding shares beneficially owned and right to acquire beneficial ownership, which consists of the shares of Common Stock subject to stock options exercisable as of, or within 60 days of, August 8, 2025 and restricted stock units vesting within 60 days of August 8, 2025 and the maximum number of shares of Common Stock upon the conversion of Preferred Stock and Warrants. Shares of Common Stock subject to stock options that are exercisable as of, or within 60 days of, August 8, 2025 and restricted stock units vesting within 60 days of August 8, 2025 and shares of Common Stock subject to conversion of Preferred Stock and Warrants are deemed to be outstanding and beneficially owned by the person holding the option, restricted stock unit, Preferred Stock or Warrants for the purpose of calculating the percentage ownership of that person, but are not deemed outstanding for the purpose of calculating the percentage ownership of any other person.
- (3) The actual number of shares of Common Stock and Preferred Stock offered hereby and included in the registration statement, of which this prospectus forms a part, includes, in accordance with Rule 416 under the Securities Act, such indeterminate number of additional shares of our Common Stock and Preferred Stock as may become issuable in connection with any proportionate adjustment for any stock splits, stock combinations, stock dividends, recapitalizations or similar events with respect to the Common Stock and Preferred Stock.
- (4) Includes shares of Common Stock held by the following entities over which Mr. Kirk (or an entity over which he exercises exclusive control) exercises exclusive control: 110,288,841 shares of Common Stock held by R.J. Kirk Declaration of Trust (including the maximum number of shares of Common Stock issuable upon the Preferred Stock and Warrants held by the trust), 6,085,471 shares of Common Stock held by Third Security, 16,406,828 shares of Common Stock held by Sunset 2020, LLC, 13,520,789 shares of Common Stock held by Kapital Joe, LLC, 3,944,437 shares of Common Stock held by MGK 2009, LLC, 3,703,398 shares of Common Stock held by JPK 2009, LLC, 1,654,363 shares of Common Stock held by JPK 2012, LLC, 1,637,040 shares of Common Stock held by MGK 2011, LLC, 1,096,686 shares of Common Stock held by Parkview 2020, 578,079 shares of Common Stock held by ZSK 2008, LLC, 490,401 shares of Common Stock held by JPK 2008, LLC, 489,438 shares of Common Stock held by MGK 2008, LLC, 453,731 shares of Common Stock held by Kellie L. Banks (2009) Long Term Trust, 351,120 shares of Common Stock held by ZSK 2009, LLC, and 1,403 shares of Common Stock held by Lotus Capital (2000) Co., Inc. Also includes 1,144,481 shares of Common Stock held by Alana D. Kirk, Mr. Kirk's spouse.
- (5) Information is based on the Schedule 13F that was filed with the SEC on August 13, 2025 by Patient Capital Management, LLC, the Schedule 13F that was filed with the SEC on August 14, 2025 by Iridian Asset Management, and certain other information known to us.

Relationships with the Selling Stockholders

Underwritten Public Offering

In August 2024, we completed an underwritten public offering of 39.88 million shares of our Common Stock for net proceeds of \$30.9 million. An affiliate of Mr. Kirk, RJ Kirk Trust, purchased 23.5 million shares of Common Stock at the public offering price of \$0.85 for an aggregate purchase price of approximately \$19.99 million.

Sales of Unregistered Securities

In December 2024, we announced that we had entered into a Securities Purchase Agreement and a related Registration Rights Agreement with the selling stockholders for the sale of our Preferred Stock and Warrants to purchase 52.67 million shares of our Common Stock, at an exercise price of \$0.75 per share in a private placement. We sold an aggregate of 79,000 shares of Preferred Stock, with an initial liquidation preference and Stated Value of \$1,000 per share, together with the Warrants, for net proceeds of approximately \$78.5 million, after deducting offering expenses.

PLAN OF DISTRIBUTION

We are registering the shares of Common Stock and Preferred Stock on behalf of the selling stockholders. The selling stockholders may, from time to time, on a continuous or delayed basis, sell any or all of their Common Stock and Preferred Stock covered hereby directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed on any stock exchange, market or trading facility on which the shares are traded or in private transactions. The sale of the selling stockholders' Common Stock and Preferred Stock offered by this prospectus may be effected in one or more of the following methods:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- transactions involving cross or block trades;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- exchange distributions in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales after the registration statement of which this prospectus forms a part becomes effective;
- transactions through broker-dealers that agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- "at the market" into an existing market for the Common Stock and Preferred Stock;
- through the writing of options on the shares;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

In order to comply with the securities laws of certain states, if applicable, the shares of the selling stockholders may be sold only through registered or licensed brokers or dealers. In addition, in certain states, such shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

The selling stockholders may sell or transfer all or a portion of their shares of our Common Stock and Preferred Stock pursuant to any available exemption from the registration requirements of the Securities Act, including under Rule 144 promulgated under the Securities Act, or Rule 144, or Section 4(a)(1) under the Securities Act, if available, rather than under this prospectus. In addition, the selling stockholders may transfer the shares of Common Stock and Preferred Stock by other means not described in this prospectus.

The selling stockholders may also sell the shares directly to market makers acting as principals and/or broker-dealers acting as agents for themselves or their customers. Such broker-dealers may receive compensation in the form of discounts, concessions or commissions from the selling stockholders and/or the purchasers of shares for whom such broker-dealers may act as agents or to whom they sell as principal or both, which compensation as to a particular broker-dealer might be in excess of customary commissions. Market makers and block purchasers purchasing the shares will do so for their own account and at their own risk. It is possible that the selling stockholders will attempt to sell shares of Common Stock and Preferred Stock in block transactions to market makers or other purchasers at a price per share which may be below the then market price. The selling stockholders cannot assure that all or any of the shares offered in this prospectus will be sold by the selling stockholders.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares held by the selling stockholders as agents may receive compensation in the form of commissions, discounts, or concessions from the

selling stockholders and/or purchasers of the Common Stock and Preferred Stock for whom the broker-dealers may act as agent. The selling stockholders may agree to indemnify any agent, dealer or broker-dealer that participates in transactions involving sales of the shares if liabilities are imposed on that person under the Securities Act.

The selling stockholders have advised us that they have not entered into any agreements, understandings or arrangements with any underwriters or broker-dealers regarding the sale of their shares of Common Stock and Preferred Stock, nor is there an underwriter or coordinating broker acting in connection with a proposed sale of shares of Common Stock and Preferred Stock by the selling stockholders. If we are notified by the selling stockholders that any material arrangement has been entered into with a broker-dealer for the sale of shares of Common Stock and Preferred Stock, if required, we will file a supplement to this prospectus.

In connection with the sale of the securities or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The selling stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

With regard only to the shares it sells for its own behalf, each selling stockholder may be deemed an “underwriter” within the meaning of the Securities Act. This offering as it relates to the selling stockholders will terminate on the date that all shares issued to the selling stockholders that are offered by this prospectus have been sold by the selling stockholders.

We may suspend the sale of shares by the selling stockholders pursuant to this prospectus for certain periods of time for certain reasons, including if the prospectus is required to be supplemented or amended to include additional material information.

If the selling stockholders use this prospectus for any sale of the shares of Common Stock and Preferred Stock, the selling stockholders will be subject to the prospectus delivery requirements of the Securities Act.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the securities may not simultaneously engage in market making activities with respect to the Common Stock and Preferred Stock for the applicable restricted period, as defined in Regulation M promulgated under the Exchange Act, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the Common Stock and Preferred Stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

LEGAL MATTERS

Certain legal matters relating to the issuance and sale of the securities offered hereby will be passed upon for us by our counsel, Hogan Lovells US LLP, Baltimore, Maryland, and Davis Polk & Wardwell LLP, New York, New York. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements of Precigen, Inc. incorporated by reference in this prospectus have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report. Such financial statements are incorporated by reference in reliance upon the report of such firm, given their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements, and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information about issuers, such as us, who file electronically with the SEC. The address of that website is www.sec.gov. We make available, free of charge, on our website at www.precigen.com, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to such reports as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the SEC.

Information on or accessible through our website is not incorporated by reference herein and does not form a part of this prospectus.

This prospectus and any prospectus supplement are part of a registration statement that we have filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained through the SEC's website, as provided above, or from us, as provided in the section of this prospectus entitled "Incorporation by Reference." Certain documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement or documents incorporated by reference in the registration statement. Statements in this prospectus or any prospectus supplement about these documents are summaries and each statement is subject, and qualified in all respects by reference, to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters.

INCORPORATION BY REFERENCE

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in this prospectus or a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or a subsequently filed document incorporated by reference modifies or replaces that statement.

This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC (other than those documents or the portions of those documents not deemed to be filed):

- the 2024 Annual Report, filed with the SEC on March 19, 2025, including the information incorporated therein by reference from our annual report on Form 10-K/A for the year ended December 31, 2024, filed with the SEC on April 28, 2025;
- our quarterly reports on Form 10-Q for the quarters ended March 31, 2025 and June 30, 2025, filed with the SEC on May 14, 2025 and August 12, 2025;

[Table of Contents](#)

- our current reports on Form 8-K filed with the SEC on January 16, 2025, June 30, 2025 and August 18, 2025 (solely with respect to Item 1.01 information); and
- the description of our Common Stock contained in our registration statement on Form 8-A filed with the SEC on September 24, 2018, including any amendment or report filed for the purpose of updating such description, including Exhibit 4.3 to the 2024 Annual Report.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including those filed after the date of the initial registration statement of which this prospectus is part and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed above or filed in the future, that are not deemed “filed” with the SEC, including any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

We will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon written or oral request of such person, a copy of any or all of the documents incorporated by reference in this prospectus, other than exhibits to such documents unless such exhibits are specifically incorporated by reference into such documents. Requests may be made in writing or by telephone at:

Precigen, Inc.
20374 Seneca Meadows Parkway
Germantown, Maryland 20876
(301) 556-9900



Precigen, Inc.

Common Stock

Preferred Stock

PROSPECTUS

August 19, 2025

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following is an estimate of the expenses (all of which are to be paid by the registrant) that we may incur in connection with the securities being registered hereby.

	Amount to be Paid
SEC registration fee	\$ 28,749.37
Legal fees and expenses	(1)
Accounting fees and expenses	(1)
Printing and miscellaneous expenses	(1)
Total	<u>\$ (1)</u>

(1) These fees are calculated based on the securities offered and the number of issuances and accordingly cannot be estimated at this time.

Item 15. Indemnification of Directors and Officers

Article 10 of Chapter 9 of Title 13.1 of the Code of Virginia, as amended, or the Virginia Stock Corporation Act, or the VSCA, permits a Virginia corporation before final disposition of a proceeding to advance funds to pay for or reimburse any officer or director for expenses incurred in connection with the proceeding if the individual is a party to the proceeding because the individual is an officer or director, and if the individual delivers to the corporation a written undertaking to repay any funds advanced if it is ultimately determined that the individual is not entitled to indemnification.

In addition, a corporation is permitted to indemnify a director or officer who is party to a proceeding because the individual is or was a director or officer against liability incurred in the proceeding.

Authorization to advance funds to, reimburse, or indemnify a director or officer must be made by the disinterested members of the board of directors, a committee of the board of directors consisting solely of disinterested directors, or shareholders, and the authorization to indemnify requires that a determination be made that the individual's conduct was in good faith and otherwise met the required standards of conduct and belief.

In a proceeding by or in the right of the corporation, no indemnification shall be made in respect of any matter as to which a director or officer is adjudged to be liable to the corporation, except for expenses incurred in connection with the proceeding if it is determined that the individual has met the relevant standard of conduct and belief. In any other proceeding, no indemnification shall be made if the director or officer is adjudged liable to the corporation on the basis that the individual improperly received a personal benefit. Corporations are given the power to make any other or further indemnity, including advance of expenses, to any director or officer that may be authorized by the articles of incorporation or any bylaw made by the shareholders, or any resolution adopted, before or after the event, by the shareholders, except an indemnity against the individual's willful misconduct or a knowing violation of criminal law. Unless limited by its articles of incorporation, indemnification against the reasonable expenses incurred by a director or officer is mandatory who is wholly successful, on the merits or otherwise, in the defense of any proceeding to which the individual is a party because the individual is or was a director or officer. In addition, the VSCA limits the personal liability of an officer or director in any proceeding brought by or in the name of the corporation or its shareholders except if the individual engaged in willful misconduct or a knowing violation of the criminal law or any federal or state securities law, including without limitation any claim of unlawful insider trading or market manipulation.

We are a Virginia corporation. Our Articles of Incorporation contain provisions limiting the liability of and indemnifying its directors and officers to the extent not prohibited by Virginia law.

Item 16. Exhibits

Exhibit Number	Description
3.1*	Amended and Restated Articles of Incorporation. (1)
3.2*	Articles of Amendment to the Amended and Restated Articles of Incorporation, dated December 27, 2024. (2)
3.3*	Articles of Amendment to the Amended and Restated Articles of Incorporation, dated July 24, 2025. (3)
3.4*	Amended and Restated Bylaws. (4)
4.1*	Specimen certificate evidencing shares of common stock. (5)
4.2*	Form of Certificate for the 8.00% Series A Convertible Perpetual Preferred Stock (included as Exhibit A to Exhibit 3.2).
5.1†	Opinion of Hogan Lovells US LLP.
10.1*	Securities Purchase Agreement, dated December 27, 2024 between Precigen Inc. and the Investors party thereto. (2)
10.2*	Registration Rights Agreement, dated December 30, 2024 between Precigen Inc. and the Investors party thereto. (2)
23.1†	Consent of Hogan Lovells US LLP (included in Exhibit 5.1).
23.2†	Consent of Deloitte & Touche LLP, independent registered public accounting firm.
24.1†	Power of Attorney.
107†	Filing Fee Table.

* Previously filed and incorporated by reference to the following filings by the Company:

- (1) Current Report on Form 8-K, filed with the Securities and Exchange Commission on February 4, 2020.
- (2) Current Report on Form 8-K, filed with the Securities and Exchange Commission on December 30, 2024.
- (3) Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission on August 12, 2025.
- (4) Current Report on Form 8-K, filed with the Securities and Exchange Commission on June 4, 2020.
- (5) Registration Statement on Form S-3, filed with the Securities and Exchange Commission on June 22, 2020.

† Filed herewith.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the “Calculation of Registration Fee” table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (a)(1)(i), (ii), and (iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished

to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:
 - (A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.
- (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Germantown, State of Maryland, on the 19th day of August, 2025.

PRECIGEN, INC.

By: /s/ Helen Sabzevari

Name: Helen Sabzevari

Title: President, Chief Executive Officer and Director

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Helen Sabzevari, Donald P. Lehr, and Harry Thomasian Jr. and each of them, his or her true and lawful attorneys-in-fact and agents, with full power to act separately and full power of substitution and resubstitution, for him and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement and to file the same, with all exhibits thereto, and all other documents in connection therewith, with the Securities and Exchange Commission, granting unto each said attorney-in-fact and agent full power and authority to do and perform each and every act in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them or his or her or their substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Helen Sabzevari</u> Helen Sabzevari	President, Chief Executive Officer and Director (Principal Executive Officer)	August 19, 2025
<u>/s/ Harry Thomasian Jr.</u> Harry Thomasian Jr.	Chief Financial Officer (Principal Financial and Accounting Officer)	August 19, 2025
<u>/s/ Randal J. Kirk</u> Randal J. Kirk	Executive Chairman of the Board of Directors	August 19, 2025
<u>/s/ Nancy Howell Agee</u> Nancy Howell Agee	Director	August 19, 2025
<u>/s/ Cesar L. Alvarez</u> Cesar L. Alvarez	Director	August 19, 2025
<u>/s/ Steven Frank</u> Steven Frank	Director	August 19, 2025
<u>/s/ Vinita D. Gupta</u> Vinita D. Gupta	Director	August 19, 2025
<u>/s/ Fred Hassan</u> Fred Hassan	Director	August 19, 2025
<u>/s/ Jeffrey B. Kindler</u> Jeffrey B. Kindler	Director	August 19, 2025
<u>/s/ James S. Turley</u> James S. Turley	Director	August 19, 2025



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August 19, 2025

Board of Directors
 Precigen, Inc.
 20374 Seneca Meadows Parkway
 Germantown, MD 20876

To the addressee referred to above:

We are acting as counsel to Precigen, Inc., a Virginia corporation (the “**Company**”), in connection with its registration statement on Form S-3, as amended (the “**Registration Statement**”), filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the “**Act**”), relating to the proposed public offering by the selling stockholders listed in the Registration Statement (the “**Selling Stockholders**”) of (i) up to 61,632,647 shares of the common stock, no par value per share, of the Company (the “**Common Stock**”) issuable to the Selling Stockholders upon the exercise of warrants (the “**Warrants**,” and such shares, the “**Warrant Shares**”), (ii) up to 79,000 shares of the 8.00% Series A Convertible Perpetual Preferred Stock, no par value per share, of the Company (the “**Preferred Shares**”) and (iii) up to 82,176,842 shares of Common Stock issuable upon conversion of the Preferred Shares (the “**Conversion Shares**,” and together with the Warrant Shares and the Preferred Shares, the “**Shares**”), all of which may be sold from time to time and on a delayed or continuous basis, as set forth in the prospectus that forms a part of the Registration Statement (the “**Prospectus**”), and as to be set forth in one or more supplements to the Prospectus. This opinion letter is furnished to you at your request to enable you to fulfill the requirements of Item 601(b)(5) of Regulation S-K, 17 C.F.R. § 229.601(b)(5), in connection with the Registration Statement.

For purposes of this opinion letter, we have examined copies of such agreements, instruments and documents as we have deemed an appropriate basis on which to render the opinions hereinafter expressed. In our examination of the aforesaid documents, we have assumed the genuineness of all signatures, the legal capacity of all natural persons, the accuracy and completeness of all documents submitted to us, the authenticity of all original documents, and the conformity to authentic original documents of all documents submitted to us as copies (including pdfs). As to all matters of fact, we have relied on the representations and statements of fact made in the documents so reviewed, and we have not independently established the facts so relied on. This opinion letter is given, and all statements herein are made, in the context of the foregoing.

This opinion letter is based as to matters of law solely on the applicable provisions of the Virginia Stock Corporation Act, as amended. We express no opinion herein as to any other statutes, rules or regulations (and in particular, we express no opinion as to any effect that such other statutes, rules or regulations may have on the opinions expressed herein).

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Based upon, subject to and limited by the foregoing, we are of the opinion that, as of the date hereof, (i) the Shares have been duly authorized by all necessary corporate action on the part of the Company, (ii) the Preferred Shares have been validly issued and are fully paid and nonassessable, (iii) following (a) exercise of the Warrants in accordance with their terms, (b) receipt by the Company of the exercise price for the Warrant Shares as specified in the applicable Warrants, and (c) issuance of the Warrant Shares thereunder, the Warrant Shares will be validly issued, fully paid and nonassessable, and (iv) following (a) conversion of the Preferred Shares in accordance with the terms of Article III, Section D of the Company's Amended and Restated Articles of Incorporation, as amended, and (b) issuance of the Conversion Shares thereunder, the Conversion Shares will be validly issued, fully paid and nonassessable.

This opinion letter has been prepared for use in connection with the Registration Statement. We assume no obligation to advise of any changes in the foregoing subsequent to the effective date of the Registration Statement.

We hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement and to the reference to this firm under the caption "Legal Matters" in the Prospectus. In giving this consent, we do not thereby admit that we are an "expert" within the meaning of the Act.

Very truly yours,

/s/ HOGAN LOVELLS US LLP

HOGAN LOVELLS US LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-3 of our report dated March 19, 2025, relating to the financial statements of Precigen, Inc., appearing in the Annual Report on Form 10-K of Precigen, Inc. for the year ended December 31, 2024. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ Deloitte & Touche LLP

Baltimore, Maryland

August 19, 2025

CALCULATION OF FILING FEE TABLES

S-3

PRECIGEN, INC.

Table 1: Newly Registered and Carry Forward Securities

Line Item Type	Security Type	Security Class Title	Notes	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
<i>Newly Registered Securities</i>									
Fees to be Paid	Equity	Series A Convertible Perpetual Preferred Stock	(1)	457(o)	79,000	\$ 1,000.00	\$ 79,000,000.00	0.0001531	\$ 12,094.90
Fees to be Paid	Equity	Common Stock Underlying the Series A Convertible Perpetual Preferred Stock	(2)	Other	82,176,842	0.00	0.00	0.0001531	0.00
Fees to be Paid	Equity	Common Stock Underlying the Warrants	(3)	Other	61,632,647	\$ 1.7650	\$ 108,781,622.00	0.0001531	\$ 16,654.47
Total Offering Amounts:							\$ 187,781,622.00		28,749.37
Total Fees Previously Paid:									0.00
Total Fee Offsets:									0.00
Net Fee Due:									<u>\$28,749.37</u>

Offering Note(s)

- (1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), there is also being registered hereby such indeterminate number of additional shares of Common Stock, no par value per share, and Series A Convertible Perpetual Preferred Stock, no par value per share, of the registrant as may be issued or issuable because of stock splits, stock dividends, stock distributions, and similar transactions. The offering price per share and aggregate offering price are estimated solely for the purpose of determining the registration fee in accordance with Rule 457(o) under the Securities Act. There currently is no public market for the shares of Series A Convertible Perpetual Preferred Stock being registered hereunder. The proposed maximum aggregate offering price of the Series A Convertible Perpetual Preferred Stock being registered hereunder represents the purchase price of \$1,000 per share paid by the selling stockholders named herein in connection with the sale of the Series A Convertible Perpetual Preferred Stock to the selling stockholders pursuant to the Securities Purchase Agreement, dated December 27, 2024, between the registrant and the investors party thereto.
- (2) Pursuant to Rule 416 under the Securities Act, there is also being registered hereby such indeterminate number of additional shares of Common Stock, no par value per share, and Series A Convertible Perpetual Preferred Stock, no par value per share, of the registrant as may be issued or issuable because of stock splits, stock dividends, stock distributions, and similar transactions. Pursuant to Rule 457(i) under the Securities Act, there is no additional filing fee payable with respect to the shares of Common Stock issuable upon conversion of the Series A Convertible Perpetual Preferred Stock because no additional consideration will be received in connection with the exercise of the conversion privilege.
- (3) Pursuant to Rule 416 under the Securities Act, there is also being registered hereby such indeterminate number of additional shares of Common Stock, no par value per share, and Series A Convertible Perpetual Preferred Stock, no par value per share, of the registrant as may be issued or issuable because of stock splits, stock dividends, stock distributions, and similar transactions. The offering price per share and aggregate offering price are estimated solely for the purpose of determining the registration fee in accordance with Rule 457(c) and 457(g) under the Securities Act, calculated as the product of (i) 61,632,647 shares of Common Stock (the number of shares of Common Stock issuable upon exercise of the Warrants), multiplied by (ii) \$1.7650 per share of Common Stock, which is the average of the high and low prices for a share of the registrant's Common Stock as reported on the Nasdaq Global Select Market on August 12, 2025, which date is a date within five business days of the filing of this registration statement.