

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are part of an effective registration statement filed with the Securities and Exchange Commission. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Filed pursuant to Rule 424(b)(5)  
Registration No. 333-282756

Subject to Completion, dated October 10, 2025

PRELIMINARY PROSPECTUS SUPPLEMENT  
(To Prospectus dated November 1, 2024)

Shares of Common Stock

Xenetic Biosciences, Inc. (the “Company” or “we”) is hereby offering to sell an aggregate of shares of our common stock, par value \$0.001 per share, pursuant to this prospectus supplement and accompanying prospectus. Each share of our common stock is being sold at a purchase price of \$ .

Our common stock is traded on The Nasdaq Capital Market (“Nasdaq”) under the symbol “XBIO.” On October 9, 2025, the last reported sales price of our common stock as reported on Nasdaq was \$9.46 per share.

As of the date of this prospectus supplement, the aggregate market value of our outstanding common stock held by non-affiliates was \$13,506,290.56 based on 1,542,139 shares of outstanding common stock on October 9, 2025, of which 1,303,696 shares were held by non-affiliates, and the last reported sale price of our common stock of \$10.36 per share on October 8, 2025. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities under Form S-3 in a primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75,000,000. During the previous 12 calendar months prior to and including the date of this prospectus supplement (excluding this offering), we have not offered any of our securities pursuant to General Instruction I.B.6 of Form S-3.

Investing in our common stock involves risks. See “[Risk Factors](#)” beginning on page S-6, and under similar headings in the other documents that are incorporated by reference into this prospectus supplement and the accompanying prospectus.

|                                            | Per Share | Total |
|--------------------------------------------|-----------|-------|
| Offering price                             | \$        | \$    |
| Underwriting discounts and commissions (1) | \$        | \$    |
| Proceeds, before expenses, to us (2)       | \$        | \$    |

- (1) We have agreed to reimburse the underwriters for certain of their reasonable out-of-pocket expenses. See “[Underwriting](#)” beginning on page S-12 for more information on this offering and the underwriting arrangements.
- (2) We estimate the total expenses of this offering payable by us, excluding the underwriting discounts and commissions, will be approximately \$0.2 million.

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

Delivery of the shares of common stock is expected to be made on or about October , 2025.

Sole Bookrunner  
Canaccord Genuity

The date of this prospectus supplement is , 2025

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## Prospectus

**You should rely only on the information contained in this prospectus supplement, the accompanying prospectus, any free writing prospectus prepared by us, or information to which we have referred you. We have not, and the underwriter has not, authorized any other person to provide you with different or additional information. If anyone provides you with different or additional information, you should not rely on it. We are not, and the underwriter is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, any applicable free writing prospectus prepared by us, and the documents incorporated by reference in the accompanying prospectus is accurate only as of their respective dates or on the date or dates which are specified in those documents. Our business, financial condition, liquidity, results of operations and prospects may have changed since those dates. This prospectus supplement and any later prospectus supplement is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so.**

### **ABOUT THIS PROSPECTUS SUPPLEMENT**

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and supplements and updates information contained in the accompanying prospectus. The second part is the accompanying prospectus, which gives more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus or documents incorporated by reference therein, the information in this prospectus supplement will supersede such information.

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

Neither we nor the underwriters have authorized anyone to provide information different from that contained in this prospectus supplement and the accompanying prospectus, including any free writing prospectus that we have authorized for use in this offering. When you make a decision about whether to invest in our common stock, you should not rely upon any information other than the information in this prospectus supplement or the accompanying prospectus, including any free writing prospectus that we have authorized for use in this offering. Neither the delivery of this prospectus supplement or the accompanying prospectus, including any free writing prospectus that we have authorized for use in this offering, nor the sale of our common stock means that information contained in this prospectus supplement and the accompanying prospectus, including any free writing prospectus that we have authorized for use in this offering, is correct after their respective dates. It is important for you to read and consider all information contained in this prospectus supplement and the accompanying prospectus, including the information incorporated by reference into this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering in making your investment decision. You should also read and consider the information in the documents to which we have referred you in the sections entitled “Where You Can Find More Information” and “Incorporation of Certain Information by Reference” in this prospectus supplement.

We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights certain information about us, this offering and selected information contained elsewhere in this prospectus supplement and in the documents incorporated by reference. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our shares of common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider carefully the more detailed information contained in or incorporated by reference in this prospectus supplement, including the information contained under the heading “[Risk Factors](#)” beginning on page S-6 of this prospectus supplement, and the information included in any free writing prospectus that we have authorized for use in connection with this offering.*

*Unless otherwise indicated or the context requires otherwise, in this prospectus supplement and the accompanying prospectus supplement, references to “we,” “us,” “our,” “Xenetic,” or the “Company” are to Xenetic Biosciences, Inc. and its subsidiaries.*

### Overview

We are a biopharmaceutical company focused on advancing innovative immuno-oncology technologies addressing difficult to treat cancers. Our proprietary DNase technology is designed to improve outcomes of existing treatments, including immunotherapies, by targeting NETs, which are involved in cancer growth, metastasis and progression, and contribute to immunotherapy, chemotherapy and radiotherapy resistance.

The DNase technology is designed to target NETs, which are weblike structures composed of extracellular chromatin coated with histones and other proteins. NETs are expelled by activated neutrophils in response to microbial or pro-inflammatory challenges. However, excessive production or reduced clearance of NETs can lead to aggravated inflammatory, hypercoagulability and autoimmune pathologies, as well as creation of pro-tumorigenic niches in the case of cancer growth and metastasis.

### Recent Developments

The Company and its board of directors (the “Board”) have initiated a formal strategic review process with the assistance of outside financial and legal advisors. The Company is considering a wide range of alternatives to maximize shareholder value, including, but not limited to, the sale of all or part of the Company or its assets or a business combination, including a “reverse merger”. An independent committee of the Board has engaged in preliminary discussions with third parties regarding potential transactions. Any such completed transaction could have a significant impact on the Company’s stockholders, including if the transaction would result in the current investors of the counterparty holding a substantial majority of the Company’s outstanding common stock following consummation of the potential transaction. Given the preliminary stage of such discussions, at this time there is no way to quantify the potential impact of a transaction, if any. There is no deadline or definitive timetable set for the completion of the strategic alternatives process, and there can be no assurance any proposal will be made or accepted, any agreement will be executed, or any transaction will be consummated in connection with this review. In addition, if the Company does enter into definitive agreements with respect to a potential transaction, the Company expects that consummation of the potential transaction would be subject to a number of conditions, including approval by the Company’s stockholders and Nasdaq, and other customary conditions, which would be out of the Company’s control and may never be satisfied. The Company does not intend to make further announcements regarding the review process unless and until the Board approves a specific transaction or otherwise determines that further disclosure is appropriate.

### Corporate Information

We were incorporated under the laws of the State of Nevada in August 2011. Our corporate headquarters and operation facilities are located at 945 Concord Street, Framingham, Massachusetts 01701. Our telephone number is (781) 778-7720. We maintain a website at [www.xeneticbio.com](http://www.xeneticbio.com). Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and amendments to those reports are available, free of charge, on or through our website as soon as practicable after we electronically file such forms, or furnish them to, the SEC. The SEC maintains an Internet website located at [www.sec.gov](http://www.sec.gov) that contains the information we file or furnish electronically with the SEC.

## The Offering

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Issuer                                                                      | Xenetic Biosciences, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Shares of common stock offered by us pursuant to this prospectus supplement | shares of our common stock, par value \$0.001 per share.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Offering price per share                                                    | \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Shares of common stock outstanding prior to this offering                   | 1,542,139 shares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Common stock outstanding immediately after this offering                    | shares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Use of proceeds                                                             | We estimate that the net proceeds from the sale of shares of common stock in this offering will be approximately \$ million after deducting underwriter discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from the sale of the shares for working capital and other general corporate purposes, as well as for the advancement of the DNase technology. See <a href="#">“Use of Proceeds”</a> beginning on page S-9 of this prospectus supplement. |
| Lock Ups                                                                    | Our officers and directors will enter into lock-up agreements restricting the transfer of shares of or securities relating to our capital stock for 60 days after the date of this prospectus, subject to certain exceptions.                                                                                                                                                                                                                                                                               |
| The Nasdaq Capital Market Symbol                                            | XBIO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Risk factors                                                                | Investing in the common stock offered by this prospectus supplement involves various risks, and you should carefully consider the matters discussed under the caption titled <a href="#">“Risk Factors”</a> beginning on page S-6 of this prospectus supplement and under similar headings in the other documents incorporated by reference in this prospectus supplement and the accompanying prospectus.                                                                                                  |

- (1) The number of shares of our common stock outstanding immediately after this offering is based on 1,542,139 shares of our common stock outstanding as of October 9, 2025, and excludes:
- 0.1 million shares of common stock underlying 1,804,394 shares of outstanding Series B Preferred Stock (0.03272 common shares for each 1 preferred share);
  - 834 shares of common stock issuable upon the exercise of outstanding warrants (average weighted exercise price of \$29.09);
  - 26 shares of common stock issuable in connection with common stock awards;
  - 0.1 million shares of common stock issuable upon the exercise of outstanding options (average weighted exercise price of \$28.18); and
  - 0.1 million shares of common stock potentially issuable in accordance with a certain milestone payment under the Company’s Executive License and Sublicense Agreement with CLS Therapeutics Ltd.

## SPECIAL NOTE REGARDING FORWARD LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus contain various “forward-looking statements” within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and Section 27A of the Securities Act of 1933, as amended. All statements contained in this prospectus supplement and the accompanying prospectus other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, future revenues, projected costs, prospects and our objectives for future operations, are forward-looking statements. These forward-looking statements include, but are not limited to, statements concerning: anticipated effects of geopolitical events, including the conflicts in the Ukraine and the Middle East and associated sanctions imposed by the U.S. and other countries in response; our plans to develop our proposed drug candidates; our expectations regarding the nature, timing and extent of clinical trials and proposed clinical trials; our expectations regarding the timing for proposed submissions of regulatory filings; our expectations regarding the nature, timing and extent of collaboration arrangements; the expected results pursuant to collaboration arrangements, including the receipts of future payments that may arise pursuant to collaboration arrangements; the outcome of our plans to obtain regulatory approval of our drug candidates; the outcome of our plans for the commercialization of our drug candidates; our plans to address certain markets, engage third party manufacturers, and evaluate additional drug candidates for subsequent commercial development along with the likelihood and extent of competition to our drug candidates; our plans to advance innovative immune-oncology technologies addressing hard to treat oncology indications; expectations regarding our Deoxyribonuclease (“DNase”) platform, such as regarding the DNase platform being in development for the treatment of solid tumors and being aimed at improving outcomes of existing treatments, including immunotherapies, by targeting neutrophil extracellular traps (“NETs”); our expectations to focus our efforts and resources on advancing the DNase platform into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors; and our expectations regarding our PolyXen® platform, including concerning our plans to leverage the platform.

In some cases, these statements may be identified by terminology such as “may,” “will,” “would,” “could,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “seek,” “approximately,” “intend,” “predict,” “potential,” “projects,” or “continue,” or the negative of such terms and other comparable terminology. Although we believe that the expectations reflected in the forward-looking statements contained herein are reasonable, we cannot guarantee future results, the levels of activity, performance or achievements. These statements involve known and unknown risks and uncertainties that may cause our or our industry’s results, levels of activity, performance or achievements to be materially different from those expressed or implied by forward-looking statement.

This prospectus supplement and the accompanying prospectus should be read together with our financial statements and related notes thereto incorporated by reference in this prospectus supplement. The forward-looking statements made herein are based on our current expectations, involve a number of risks and uncertainties and should not be considered as guarantees of future performance. This prospectus supplement and the accompanying prospectus and the other documents we have filed with the SEC that are incorporated by reference herein contain trend analysis and other forward-looking statements. Any statements that are not statements of historical facts are forward-looking statements.

You should carefully consider these risks before you make an investment decision with respect to our securities, along with the following factors that could cause actual results to differ materially from our forward-looking statements:

- uncertainty of the expected financial performance of the Company;
- failure to realize the anticipated potential of the DNase technology;
- our ability to implement our business strategy;
- our failure to maintain compliance with the continued listing requirements of the Nasdaq Stock Market;
- our need to raise additional working capital in the future for the purpose of further developing our pipeline and to continue as a going concern;
- our ability to finance our business;
- our ability to successfully execute, manage and integrate key acquisitions and mergers;
- product development and commercialization risks, including our ability to successfully develop the DNase technology;
- the impact of adverse safety outcomes and clinical trial results for our therapies;
- our ability to secure and maintain a manufacturer for our technologies;
- the impact of new therapies and new uses of existing therapies on the competitive environment;
- our ability to successfully commercialize our current and future drug candidates;
- our ability to achieve milestone and other payments associated with our current and future co-development collaborations and strategic arrangements;
- our reliance on consultants, advisors, vendors and business partners to conduct work on our behalf;
- the impact of new technologies on our drug candidates and our competition;
- changes in laws or regulations of governmental agencies;
- interruptions or cancellation of existing contracts;
- impact of competitive products and pricing;
- product demand and market acceptance and risks;
- the presence of competitors with greater financial resources;
- continued availability of supplies or materials used in manufacturing at the current prices;
- the ability of management to execute plans and motivate personnel in the execution of those plans;
- our ability to attract and retain key personnel;
- costs, diversion and other adverse effects of the actions of activist shareholders;
- adverse publicity related to our products or the Company itself;
- adverse claims relating to our intellectual property;
- the adoption of new, or changes in, accounting principles;
- the costs inherent with complying with statutes and regulations applicable to public reporting companies, such as the Sarbanes-Oxley Act of 2002;
- other new lines of business that the Company may enter in the future;
- general economic and business conditions, as well as inflationary trends and financial market instability or disruptions to the banking system due to bank failures;
- the impact of natural disasters or public health emergencies, such as the COVID-19 global pandemic, and geopolitical events, such as the conflicts in the Ukraine and the Middle East, and related sanctions and other economic disruptions or concerns, on our financial condition and results of operations; and
- other factors set forth in the Risk Factors section of our Annual Report on Form 10-K and in subsequent filings with the Securities and Exchange Commission (“SEC”).

These factors are not necessarily all of the important factors that could cause actual results to differ materially from those expressed in the forward-looking statements in this prospectus supplement. Other unknown or unpredictable factors also could have material adverse effects on our future results, including, but not limited to, those discussed in the section titled “Risk Factors.” The forward-looking statements in this prospectus are made only as of the date of this prospectus, and we do not undertake any obligation to publicly update any forward-looking statements to reflect subsequent events or circumstances. We intend that all forward-looking statements be subject to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995.

## RISK FACTORS

*An investment in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks described below and discussed under the section captioned “Risk Factors” in our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q, which are each incorporated by reference in this prospectus supplement and the accompanying prospectus in their entirety, as well as any amendment or update to our risk factors reflected in subsequent filings with the SEC, together with other information in this prospectus supplement, the accompanying prospectus, and the information and documents incorporated by reference that we have authorized for use in connection with this offering. If any of these risks actually occur, our business, financial condition, results of operations or cash flows could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment.*

### **Risks Related to Our Common Stock and This Offering**

*An active, liquid and orderly market for our common stock may not develop.*

Our common stock trades on Nasdaq. An active trading market for our common stock may never develop or be sustained. If an active market for our common stock does not continue to develop or is not sustained, it may be difficult for investors in our common stock to sell shares without depressing the market price for the shares or to sell the shares at all. An inactive market may also impair our ability to raise capital by selling common stock and may impair our ability to acquire other businesses, applications or technologies using our common stock as consideration, which, in turn, could materially adversely affect our business.

*The market price of our stock may be highly volatile, and you may not be able to sell shares of our stock.*

Companies trading in the stock market in general have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our stock, regardless of our actual operating performance.

The market price of our stock may be volatile. Our stock price could be subject to wide fluctuations in response to a variety of factors, including the following:

- Failure to realize the anticipated potential of the DNase technologies;
- Adverse results or delays in pre-clinical or clinical studies;
- Inability to obtain additional funding;
- Any delay in filing an Investigational New Drug (“IND”) or biologics license application (“BLA”) for any of our drug candidates and any adverse development or perceived adverse development with respect to the FDA’s review of that IND or BLA;
- Failure to develop successfully our drug candidates;
- Failure to maintain our existing strategic collaborations or enter into new collaborations;
- Failure by us or our licensors and strategic collaboration partners to prosecute, maintain or enforce our intellectual property rights;
- Changes in laws or regulations applicable to future products;
- Inability to obtain adequate product supply for our drug candidates or the inability to do so at acceptable prices;
- Adverse regulatory decisions;
- Introduction of new products, services or technologies by our competitors;
- Failure to meet or exceed financial projections we may provide to the public;
- Failure to meet or exceed the financial projections of the investment community;
- The perception of the pharmaceutical industry by the public, legislatures, regulators and the investment community;
- Announcements of significant acquisitions, strategic partnerships, joint ventures or capital commitments by us, our strategic collaboration partner or our competitors;
- Disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- Additions or departures of key scientific or management personnel;
- Significant lawsuits, including patent or stockholder litigation;
- Changes in the market valuations of similar companies;
- Sales of our common stock by us or our stockholders in the future;
- Adverse economic conditions, including potential adverse effects of public health issues, such as the coronavirus outbreak, and geopolitical events, such as the Russian invasion of Ukraine, and related sanctions and other economic disruptions or concerns, on economic activity generally; and
- Trading volume of our common stock.



***We have entered into several agreements with our stockholders.***

We have in the past, and may continue to enter into from time to time, agreements with our stockholders, which may result in conflicts of interest. In addition, these arrangements may not have been negotiated at arm's length and may contain terms and conditions that are not in the best interest of our stockholders.

***Our preferred stock has rights, preferences and privileges that are not held by, and are preferential to, the rights of our common stockholders, which could result in the interests of the holders of our preferred stock differing from those of our common stockholders.***

The holders of our preferred stock have the right to receive a liquidation preference entitling them to be paid out of our assets available for distribution to stockholders before any payment may be made to holders of any common stock or any series of preferred stock ranked junior to such class of preferred stock. The existence of a liquidation preference may reduce the value of our common stock, make it harder for us to sell shares of common stock in offerings in the future, or prevent or delay a change of control. Additionally, each share of Series A preferred stock and Series B preferred stock are convertible into shares of our common stock, subject to an issuable maximum and certain adjustments, which may cause significant dilution to our common stockholders. The preferential rights could result in divergent interests between the holders of shares of preferred stock and holders of our common stock.

***The issuance of future shares of common stock may result in dilution to our stockholders.***

As of October 9, 2025, we had 1,542,139 shares of our common stock outstanding, excluding:

- 0.1 million shares of common stock underlying 1,804,394 shares of outstanding Series B Preferred Stock (0.03272 common shares for each 1 preferred share);
- 834 shares of common stock issuable upon the exercise of outstanding warrants (average weighted exercise price of \$29.09);
- 26 shares of common stock issuable in connection with common stock awards;
- 0.1 million shares of common stock issuable upon the exercise of outstanding options (average weighted exercise price of \$28.18); and
- 0.1 million shares of common stock potentially issuable in accordance with a certain milestone payment under the Company's Executive License and Sublicense Agreement with CLS Therapeutics Ltd.

The issuance of these shares of common stock and the sale of these shares of common stock, or even the potential of such issuance and sale, may have a depressive effect on the market price of our common stock and the issuance of such common stock will cause dilution to our stockholders.

***We could be subject to securities class action litigation.***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because pharmaceutical companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

***We do not intend to pay dividends on our common stock or preferred stock so any returns will be limited to the value of our stock.***

We have never declared or paid any cash dividends on our common stock or preferred stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to common or preferred stockholders will therefore be limited to the appreciation of their stock.

***You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.***

Since the price per share of our common stock being offered is expected to be substantially higher than the net tangible book value per share of our common stock, your interest will be diluted to the extent of the difference between the price per share you pay and the net tangible book value per share of our common stock. Based on an offering price of \$ per share, after deducting estimated offering commissions and expenses, and based on our net tangible book value of the common stock of \$2.89 per share as of June 30, 2025, as adjusted, if you purchase shares of our common stock in this offering, you will suffer immediately dilution of \$ per share in the net tangible book value of the common stock. The exercise of outstanding options and warrants will result in further dilution of your investment. See “[Dilution](#).”

***Our management will have broad discretion as to the use of proceeds from this offering, and we may not use the proceeds effectively.***

Our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. You will not have the opportunity, as part of your investment decision, to assess whether these proceeds are being used appropriately. Our failure to apply these funds effectively could have a material adverse effect on our business and cause the price of our common stock to decline.

***We expect that we may need additional capital in the future; however, such capital may not be available to us on reasonable terms, if at all, when or as we require additional funding. If we issue additional shares of our common stock or other securities that may be convertible into, or exercisable or exchangeable for, our common stock, our existing stockholders would experience further dilution.***

Although we expect that we may need additional capital in the future, we cannot be certain that it will be available to us on acceptable terms when required, or at all. Disruptions in the global equity and credit markets may limit our ability to access capital. To the extent that we raise additional funds by issuing equity securities, our shareholders would experience dilution, which may be significant and could cause the market price of our common stock to decline significantly. Any debt financing, if available, may restrict our operations. If we are unable to raise additional capital when required or on acceptable terms, we may have to significantly delay, scale back or discontinue certain operations. Any of these events could significantly harm our business and prospects and could cause our stock price to decline.

***Certain provisions of our Articles of Incorporation, Bylaws, and the Nevada Revised States may be deemed to have an anti-takeover effect, which could cause the market price of our common stock to decline.***

Certain provisions of our Articles of Incorporation, Bylaws, and the Nevada Revised States may be deemed to have an anti-takeover effect. Such provisions may delay, deter or prevent a tender offer or takeover attempt that a stockholder might consider to be in that stockholder’s best interests, including attempts that might result in a premium over the market price for the shares held by stockholders, which could cause the market price of our common stock to decline.

***We are a smaller reporting company and the reduced reporting requirements applicable to smaller reporting companies may make our common stock less attractive to investors.***

We are a smaller reporting company (“SRC”), which allows us to take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not SRCs, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended, reduced disclosure obligations regarding executive compensation in our Annual Report and our periodic reports and proxy statements and providing only two years of audited financial statements in our Annual Report and our periodic reports. We will remain an SRC until (a) the aggregate market value of our outstanding common stock held by non-affiliates as of the last business day our most recently completed second fiscal quarter exceeds \$250 million or (b) (1) we have over \$100 million in annual revenues and (2) the aggregate market value of our outstanding common stock held by non-affiliates as of the last business day our most recently completed second fiscal quarter exceeds \$700 million. We cannot predict whether investors will find our common stock less attractive if we rely on certain or all of these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile and may decline.

## USE OF PROCEEDS

Based upon the offering price of \$ per share of common stock, we estimate that the net proceeds from the sale of the securities offered under this prospectus supplement, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, will be \$ million.

We intend to use the net proceeds from the sale of the shares for working capital and for other general corporate purposes, as well as for the advancement of the DNase technology. The amounts and timing of our use of proceeds will vary depending on a number of factors, including the amount of cash generated or used by our operations. As a result, we will retain broad discretion in the allocation of the net proceeds of this offering. In addition, while we have not entered into any agreements, commitments or understandings relating to any significant transaction as of the date of this prospectus supplement, we may use a portion of the net proceeds to pursue acquisitions, joint ventures and other strategic transactions.

## DILUTION

Purchasers of common stock in this offering will experience dilution to the extent of the difference between the price per share you pay in this offering and the net tangible book value per share of our common stock immediately after this offering. The net tangible book value of our common stock on June 30, 2025, was approximately \$4.4 million, or approximately \$2.89 per share. Net tangible book value per share is equal to the amount of our total tangible assets, less total liabilities, divided by the aggregate number of shares of our common stock outstanding.

On an as adjusted basis, after giving effect to the sale of shares in this offering at an offering price of \$ per share and after deducting the underwriting discounts and commissions and the estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2025 would have been approximately \$ million, or approximately \$ per share of common stock. This represents an immediate increase in net tangible book value of approximately \$ per share to existing stockholders and an immediate dilution of approximately \$ per share to new investors purchasing shares of our common stock in this offering. The following table illustrates this per share dilution:

|                                                                   |    |
|-------------------------------------------------------------------|----|
| Offering price per share                                          | \$ |
| Net tangible book value per share as of June 30, 2025             | \$ |
| Increase per share attributable to new investors in this offering | \$ |
| As adjusted net tangible book value per share as of June 30, 2025 | \$ |
| Dilution per share to investors participating in this offering    | \$ |

The number of shares of our outstanding common stock reflected in the discussion and table above is based on 1,542,139 shares of common stock outstanding as of October 9, 2025 and excludes, as of that date:

- 0.1 million shares of common stock underlying 1,804,394 shares of outstanding Series B Preferred Stock (0.03272 common shares for each 1 preferred share);
- 834 shares of common stock issuable upon the exercise of outstanding warrants (average weighted exercise price of \$29.09);
- 26 shares of common stock issuable in connection with common stock awards;
- 0.1 million shares of common stock issuable upon the exercise of outstanding options (average weighted exercise price of \$28.18); and
- 0.1 million shares of common stock potentially issuable in accordance with a certain milestone payment under the Company's Executive License and Sublicense Agreement with CLS Therapeutics Ltd.

## DESCRIPTION OF SECURITIES WE ARE OFFERING

### *Common Stock*

The material terms and provisions of our common stock and each other class of our securities that qualifies or limits our common stock are described under the caption “Description of Capital Stock” in the accompanying prospectus. Our charter provides that we may issue up to 10,000,000 shares of common stock, \$0.001 par value per share, and 10,000,000 shares of preferred stock, \$0.001 par value per share, 1,000,000 of which are designated as Series A Preferred Stock, 2,500,000 of which are designated as Series B Preferred Stock, and 6,500,000 of which shares of preferred stock are undesignated. Under Nevada law, stockholders are not generally liable for our debts or obligations. Our common stock is listed on The Nasdaq Capital Market under the symbol “XBIO.” Our transfer agent is Empire Stock Transfer, Inc.

## UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated October 10, 2025, between us and Canaccord Genuity LLC, or Canaccord Genuity, the underwriter, we have agreed to sell to the underwriter, and the underwriter has agreed to purchase from us, the number of shares of common stock shown opposite its name below:

| Underwriter           | Number of Shares |
|-----------------------|------------------|
| Canaccord Genuity LLC |                  |
| Total                 |                  |

The underwriting agreement provides that the obligations of the underwriter are subject to certain conditions precedent such as the receipt by the underwriter of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriter will purchase all of the shares of common stock if any of them are purchased.

We have agreed to indemnify the underwriter and certain of its controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriter may be required to make in respect of those liabilities.

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

The underwriter is offering the shares of common stock subject to its acceptance of the shares of common stock from us and subject to prior sale. The underwriter reserves the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part. In addition, the underwriter has advised us that it does not intend to confirm sales to any account over which they exercise discretionary authority.

### Commission and Expenses

The underwriter has advised us that it proposes to offer the shares of common stock directly to investors at the offering price set forth on the cover page of this prospectus supplement and to certain dealers, which may include the underwriter, at that price less a concession not in excess of \$ per share of common stock. After the offering, the offering price, concession and reallowance to dealers may be reduced by the representative. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus supplement.

The following table shows the offering price, the underwriting discounts and commissions that we are to pay the underwriter and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriter's option to purchase additional shares.

|                                                   | PER SHARE | TOTAL |
|---------------------------------------------------|-----------|-------|
| Offering price                                    | \$        | \$    |
| Underwriting discounts and commissions paid by us | \$        | \$    |
| Proceeds to us, before expenses                   | \$        | \$    |

We estimate net expenses payable by us in connection with this offering, other than the estimated underwriting discounts and commissions referred to above, will be approximately \$ . We have agreed to reimburse the underwriter for certain of its expenses incurred in connection with this offering in an amount not to exceed \$75,000 in the aggregate.

## **Nasdaq Listing**

The shares of common stock are listed on Nasdaq under the symbol “XBIO.”

## **Transfer Agent**

The transfer agent and registrar for our common stock is Empire Stock Transfer, Inc. Their contact information is: 1859 Whitney Mesa Drive, Henderson, Nevada 89014; phone number (702) 818-5898, [www.empirestock.com](http://www.empirestock.com).

## **Stamp Taxes**

If you purchase shares of securities offered in this prospectus supplement, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover page of this prospectus supplement.

## **No Sales of Similar Securities**

We have agreed, subject to specified exceptions, not to directly or indirectly:

- offer, sell, contract to sell, pledge, hedge, or otherwise dispose of (or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by us or our affiliates or any person in privity with us or our affiliates), directly or indirectly, including the filing or submission (or participation in the filing or submission) of a registration statement with the SEC in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Exchange Act, any other shares of common stock or any securities convertible into, or exercisable, or exchangeable for, shares of common stock; or
- publicly announce an intention to do any of the foregoing for a period of 60 days after the date of this prospectus supplement without the prior written consent of Canaccord Genuity.

## **Lock-Up Agreements**

Pursuant to certain “lock-up” agreements, our executive officers and directors have agreed, subject to certain exceptions, not to (i) directly or indirectly, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock or file any registration statement under the Securities Act with respect to any of the foregoing or (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of our common stock, whether any such swap or transaction described in clause (i) or (ii) above is to be settled by delivery of our common stock or other securities, in cash or otherwise, without the prior written consent of the underwriter, for a period of 60 days after the date of this prospectus supplement.

The underwriter, in its sole discretion, may release our common stock and other securities subject to the lock-up agreements described above in whole or in part at any time. When determining whether or not to release our common stock and other securities from lock-up agreements, the underwriter will consider, among other factors, the holder’s reasons for requesting the release, the number of shares for which the release is being requested and market conditions at the time of the request.

## **Stabilizing Transactions and Penalty Bids**

In order to facilitate this offering, persons participating in this offering may engage in transactions that stabilize, maintain, or otherwise affect the price of common stock during and after this offering. Specifically, the underwriter may engage in the following activities in accordance with the rules of the SEC.

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

*Penalty bids.* If the underwriter purchases shares of common stock in the open market in a stabilizing transaction or syndicate covering transaction, it may reclaim a selling concession from the underwriter and selling group members who sold those shares of common stock as part of this offering. Stabilization and syndicate covering transactions may cause the price of the shares of common stock to be higher than it would be in the absence of these transactions. The imposition of a penalty bid might also have an effect on the price of the shares of common stock if it discourages presales of the shares of common stock.

The transactions above may occur on Nasdaq or otherwise. Neither we nor the underwriter make any representation or prediction as to the effect that the transactions described above may have on the price of the shares of common stock. If these transactions are commenced, they may be discontinued without notice at any time.

## **Electronic Distribution**

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

## **Other Activities and Relationships**

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

In the ordinary course of its various business activities, the underwriter and certain of its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own accounts and for the accounts of their respective customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriter or its affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriter and its affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriter and certain of its affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments. Canaccord Genuity served as the underwriter for the July 2025 Offering and received compensation in connection therewith.



## **Selling Restrictions**

### ***Notice to Prospective Investors in the European Economic Area***

In relation to each Member State of the European Economic Area (each a “Relevant Member State”), no securities have been offered or will be offered pursuant to the offering to the public in that Relevant Member State prior to the publication of a prospectus in relation to the securities which have been approved by the competent authority in that Relevant Member State or, where appropriate, approved in another Relevant Member State and notified to the competent authority in that Relevant Member State, all in accordance with the Prospectus Regulation, except that the securities may be offered to the public in that Relevant Member State at any time:

- to any legal entity which is a qualified investor as defined under Article 2 of the Prospectus Regulation;
- to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the Prospectus Regulation) subject to obtaining the prior consent of the representative for any such offer; or
- in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

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

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

Each person in a Relevant Member State who receives any communication in respect of, or who acquires any securities under, the offering contemplated hereby will be deemed to have represented, warranted and agreed to and with the underwriter and its affiliates and us that:

- it is a qualified investor within the meaning of the Prospectus Regulation; and
- in the case of any securities acquired by it as a financial intermediary, as that term is used in Article 5 of the Prospectus Regulation, (i) the securities acquired by it in the offering have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Relevant Member State other than qualified investors, as that term is defined in the Prospectus Regulation, or have been acquired in other circumstances falling within the points (a) to (d) of Article 1(4) of the Prospectus Regulation and the prior consent of the book-running manager has been given to the offer or resale; or (ii) where the securities have been acquired by it on behalf of persons in any Relevant Member State other than qualified investors, the offer of those securities to it is not treated under the Prospectus Regulation as having been made to such persons.

We, the underwriter and its affiliates, and others will rely upon the truth and accuracy of the foregoing representation, acknowledgement and agreement. Notwithstanding the above, a person who is not a qualified investor and who has notified the underwriter of such fact in writing may, with the prior consent of the underwriter, be permitted to acquire securities in the offering.

This European Economic Area selling restriction is in addition to any other selling restrictions set out below.

### ***Notice to Prospective Investors in the United Kingdom***

In relation to the United Kingdom, no shares have been offered or will be offered pursuant to the offering to the public in the United Kingdom prior to the publication of a prospectus in relation to the shares which has been approved by the Financial Conduct Authority in accordance with the transition provisions in Regulation 74 of the Prospectus (Amendment etc.) (EU Exit) Regulations 2019, except that it may make an offer to the public in the United Kingdom of any shares at any time under the following exemptions under the UK Prospectus Regulation:

- to any legal entity which is a qualified investor as defined under Article 2 of the UK Prospectus Regulation
- to fewer than 150 natural or legal persons (other than qualified investors as defined under the UK Prospectus Regulation), subject to obtaining the prior consent of the representative for any such offer; or
- any other circumstances falling within section 86 of the Financial Services and Markets Act 2000 (as amended, the “FSMA”),

provided that no such offer of the shares shall require the Company or the underwriter to publish a prospectus pursuant to section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

In the United Kingdom, the offering is only addressed to, and is directed only at, “qualified investors” within the meaning of Article 2(e) of the UK Prospectus Regulation, who are also (i) persons having professional experience in matters relating to investments who fall within the definition of “investment professionals” in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the “Order”); (ii) high net worth entities or other persons falling within Article 49(2)(a) to (d) of the Order; or (iii) persons to whom it may otherwise lawfully be communicated (all such persons being referred to as “relevant persons”). This document must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is available only to relevant persons and will be engaged in only with relevant persons.

For the purposes of this provision, the expression an “offer to the public” in relation to the shares in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offering and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, and the expression “UK Prospectus Regulation” means the Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

Each person in the UK who acquires any securities in the offer or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with us, the underwriter and its affiliates that it meets the criteria outlined in this section.

### ***Notice to Prospective Investors in Bermuda***

Securities may be offered or sold in Bermuda only in compliance with the provisions of the Investment Business Act of 2003 of Bermuda which regulates the sale of securities in Bermuda. Additionally, non-Bermudian persons (including companies) may not carry on or engage in any trade or business in Bermuda unless such persons are permitted to do so under applicable Bermuda legislation.

### ***Notice to Prospective Investors in Australia***

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

- a “sophisticated investor” under section 708(8)(a) or (b) of the Corporations Act;
- a “sophisticated investor” under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to the company which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
- a person associated with the Company under Section 708(12) of the Corporations Act; or
- a “professional investor” within the meaning of section 708(11)(a) or (b) of the Corporations Act

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

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

### ***Notice to Prospective Investors in Hong Kong***

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

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

### ***Notice to Prospective Investors in Japan***

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended), or FIEL, and the underwriter will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means, unless otherwise provided herein, any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to or for the benefit of a resident of Japan, except pursuant to an exemption from S-30 the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

### ***Notice to Prospective Investors in Singapore***

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

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

- a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor, securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the securities pursuant to an offer made under Section 275 of the SFA except:
  - o to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
  - o where no consideration is or will be given for the transfer;
  - o where the transfer is by operation of law;
  - o as specified in Section 276(7) of the SFA; or
  - o as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Singapore SFA Product Classification - In connection with Section 309B of the SFA and the Securities and Futures (Capital Markets Products) Regulations 2018 (the "CMP Regulations 2018"), we have determined, and hereby notify all relevant persons (as defined in the CMP Regulations 2018), that the shares are "prescribed capital markets products" (as defined in the CMP Regulations 2018) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

### ***Notice to Prospective Investors in Switzerland***

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

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

### ***Notice to Prospective Investors in Canada***

#### ***(A) Resale Restrictions***

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

#### ***(B) Representations of Canadian Purchasers***

By purchasing securities in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the securities without the benefit of a prospectus qualified under those securities laws as it is an “accredited investor” as defined under National Instrument 45-106 - Prospectus Exemptions or Section 73.3(1) of the Securities Act (Ontario), as applicable;
- the purchaser is a “permitted client” as defined in National Instrument 31-103 - Registration Requirements, Exemptions and Ongoing Registrant Obligations;
- where required by law, the purchaser is purchasing as principal and not as agent; and
- the purchaser has reviewed the text above under Resale Restrictions.

***(C) Conflicts of Interest***

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

***(D) Statutory Rights of Action***

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

***(E) Enforcement of Legal Rights***

All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

***(F) Taxation and Eligibility for Investment***

Canadian purchasers of securities should consult their own legal and tax advisors with respect to the tax consequences of an investment in the securities in their particular circumstances and about the eligibility of the securities for investment by the purchaser under relevant Canadian legislation.

***Notice to Prospective Investors in Israel***

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

### *Notice to Prospective Investors in France*

Neither this prospectus supplement nor any other offering material relating to the shares or pre-funded warrants described in this prospectus supplement has been submitted to the clearance procedures of the Autorité des Marchés Financiers or of the competent authority of another member state of the European Economic Area and notified to the Autorité des Marchés Financiers. The shares or pre-funded warrants have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the shares or pre-funded warrants has been or will be:

- released, issued, distributed or caused to be released, issued or distributed to the public in France; or
- used in connection with any offer for subscription or sale of the shares or pre-funded warrants to the public in France.

Such offers, sales and distributions will be made in France only:

- to qualified investors (*investisseurs qualifiés*) and/or to a restricted circle of investors (*cercle restreint d'investisseurs*), in each case investing for their own account, all as defined in, and in accordance with articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier;
- to investment services providers authorized to engage in portfolio management on behalf of third parties; or
- in a transaction that, in accordance with article L.411-2-II-1° -or-2° -or 3° of the French Code monétaire et financier and article 211-2 of the General Regulations (*Règlement Général*) of the Autorité des Marchés Financiers, does not constitute a public offer (*appel public à l'épargne*).

The shares or pre-funded warrants may be resold directly or indirectly, only in compliance with articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code monétaire et financier.

## **General Non-U.S. Legend**

This prospectus supplement is for use solely in connection with the proposed offering in certain jurisdictions. This prospectus supplement is not to be distributed in any other jurisdiction and is not to be used in connection with any offer of, or any invitation or solicitation by or on behalf of the Company to subscribe for or purchase, securities in any other jurisdiction. This prospectus supplement is personal to each offeree and does not constitute an offer to any person or to the public generally to subscribe for or otherwise acquire the securities. Distribution of this prospectus supplement to any person other than the prospective investor and any person retained to advise such prospective investor with respect to its purchase is unauthorized.

Delivery of this prospectus supplement shall not constitute an offer to sell or the solicitation of an offer to buy the securities described herein.

The distribution of this prospectus supplement in certain jurisdictions may be restricted by law. You must inform yourself about, and observe, any such restrictions. You must comply with all applicable laws and regulations in force in any jurisdiction in which you purchase, offer or sell the securities or possess or distribute this prospectus supplement and must obtain any consent, approval or permission required for your purchase, offer or sale of the securities under the laws and regulations in force in any jurisdiction to which you are subject or in which you make such purchases, offers or sales. We and the underwriter are not making an offer of, or invitation to purchase, any of the securities to any person in any jurisdiction in which such offer or solicitation would be unlawful.

This prospectus supplement has not been submitted to the review or registration procedures of any regulatory authority outside the United States. The offering of the securities pursuant to this prospectus supplement has not been approved or recommended by any governmental securities regulator.



## **LEGAL MATTERS**

The validity of the securities offered hereby has been passed upon for us by Westward Law, LLC, Las Vegas, Nevada. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York is counsel for the underwriters in connection with this offering.

## **EXPERTS**

The consolidated financial statements incorporated in this prospectus supplement and the accompanying prospectus by reference from Xenetic Biosciences, Inc.'s and subsidiaries' Annual Report on Form 10-K have been audited by Marcum LLP, an independent registered public accounting firm, as stated in their report, which are incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

## **WHERE YOU CAN FIND MORE INFORMATION**

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at [www.sec.gov](http://www.sec.gov). Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge by linking directly from our website at [www.xeneticbio.com](http://www.xeneticbio.com). These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

We have filed with the SEC a registration statement under the Securities Act relating to the offering of these securities. The registration statement, including the exhibits attached thereto, contains additional relevant information about us and the securities. This prospectus supplement and the accompanying prospectus do not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the SEC at the address listed above. The registration statement and the documents referred to below under "Incorporation by Reference" are also available on our Internet website, [www.xeneticbio.com](http://www.xeneticbio.com). We are not incorporating by reference into this prospectus supplement the information on our website, and you should not consider our website to be a part of this prospectus supplement.

## INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC's rules allow us to "incorporate by reference" information into this prospectus supplement and the accompanying 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 from the date of filing those documents. Any reports filed by us with the SEC on or after the date of this prospectus will automatically update and, where applicable, supersede any information contained in this prospectus or incorporated by reference in this prospectus supplement. We have filed the documents listed below with the SEC under the Exchange Act, and these documents are incorporated herein by reference (other than information in such documents that is furnished and not deemed to be filed):

- Our Annual Report on [Form 10-K](#) for the year ended December 31, 2024, filed on March 18, 2025 as amended by that [Form 10-K/A](#), filed on April 29, 2025, as amended by that [Form 10-K/A](#) filed on May 13, 2025;
- Our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2025, filed on May 13, 2025;
- Our Quarterly Report on [Form 10-Q](#) for the quarter ended June 30, 2025, filed on August 12, 2025;
- Our Current Report on [Form 8-K](#) filed on April 10, 2025;
- The description of our common stock included in our Registration Statement on [Form 8-A12B](#), filed on November 1, 2016;
- The description of our Series A Preferred Stock included in our Registration Statement on [Form S-1/A](#), filed on October 27, 2016; and
- The description of our Series B Preferred Stock included in our Registration Statement on [Form S-1/A](#), filed on October 31, 2016.

All documents we file pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and prior to the termination of the offering of the securities to which this prospectus relates (other than information in such documents that is furnished and not deemed to be filed) shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing of those documents. All documents we file pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement that contains this prospectus and prior to the effectiveness of the registration statement shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing those documents.

We will provide to each person, including any beneficial owner, to whom a copy of this prospectus supplement is delivered, a copy of any or all of the information that has been incorporated by reference in this prospectus supplement but not delivered with this prospectus supplement (other than the exhibits to such documents which are not specifically incorporated by reference therein); we will provide this information at no cost to the requester upon written or oral request to: Chief Financial Officer, Xenetic Biosciences, Inc., 945 Concord Street, Framingham, Massachusetts, 01701, or (781) 778-7720.

## PROSPECTUS



**Xenetic Biosciences, Inc.**  
**\$50,000,000**

**Common Stock**  
**Preferred Stock**  
**Warrants**  
**Units**  
**Rights**  
**Depository Shares**  
**Debt Securities**

We may offer, issue and sell, from time to time, shares of our common stock, preferred stock, warrants, units, rights, depository shares and debt securities which may consist of debentures, notes, or other types of debt, in one or more offerings with an aggregate offering price not to exceed \$50,000,000. We will provide specific terms of each offering and issuance of these securities, such as when we sell the securities, the amounts of securities we will sell and the prices and other terms on which we will sell them, in supplements to this prospectus. We may offer and sell these securities to or through one or more underwriters, dealers and agents, or directly to purchasers, on a continuous or delayed basis. You should read this prospectus and any supplement carefully before you decide to invest. This prospectus may not be used to consummate sales of these securities unless it is accompanied by a prospectus supplement.

Our common stock is listed on the Nasdaq Capital Market ("Nasdaq") under the symbol "XBIO". As of September 30, 2024, the aggregate market value of our outstanding common stock held by non-affiliates, or public float, was approximately \$5.6 million based on 1,303,696 shares of outstanding common stock held by non-affiliates, at a price of \$4.32 per share, which was the last reported sale price of our common stock on Nasdaq on September 30, 2024. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell the shelf securities in a public primary offering with a value exceeding more than one-third of the aggregate market value of our voting and non-voting common equity held by non-affiliates in any 12-month period as long as the aggregate market value of our outstanding voting and non-voting common equity held by non-affiliates is less than \$75 million.

Our principal office is located at 945 Concord Street, Framingham, Massachusetts 01701. Our telephone number is (781) 778-7720.

*Investing in our securities involves risks. You should carefully consider the information referred to under the heading "[Risk Factors](#)" on page 4 of this prospectus before you invest.*

**NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED THAT THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.**

**The date of this prospectus is November 1, 2024**

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**You should rely only on the information contained in this document or to which we have referred you. We have not authorized anyone to provide you with information that is different. This document may only be used where it is legal to sell these securities. The information in this document may only be accurate on the date of this document.**

## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission (the “SEC”) using a “shelf” registration process. Under this shelf registration process, we may sell the securities described in this prospectus in one or more offerings with an aggregate offering price not to exceed \$50,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we offer to sell securities, we will provide a supplement to this prospectus that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. It is important for you to consider the information contained in this prospectus and any prospectus supplement together with additional information described under the headings “[\*Where You Can Find More Information\*](#)” and “[\*Incorporation of Certain Documents by Reference\*](#).”

You should rely only on the information incorporated by reference or set forth in this prospectus or the applicable prospectus supplement. We have not authorized anyone else to provide you with additional or different information. You should not assume that the information in this prospectus, the applicable prospectus supplement or any other offering material is accurate as of any date other than the dates on the front of those documents.

Our logo and some of our trademarks and tradenames are used in this prospectus. This prospectus also includes trademarks, tradenames and service marks that are the property of others. Solely for convenience, trademarks, tradenames and service marks referred to in this prospectus may appear without the ®, ™ and SM symbols. References to our trademarks, tradenames and service marks 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, nor that respective owners to other intellectual property rights will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend the use or display of other companies’ trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by any other companies. Since our patents are either held by us or our wholly-owned subsidiaries, we will not distinguish between patents held by us or our subsidiaries in this prospectus.

References in this prospectus to “we,” “us,” “our,” “Xenetic” or the “Company” are to Xenetic Biosciences, Inc. and its subsidiaries.

## CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the other documents we have filed with the SEC that are incorporated by reference herein contain forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and Section 27A of the Securities Act of 1933, as amended. All statements contained in this prospectus other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, future revenues, projected costs, prospects and our objectives for future operations, are forward-looking statements. These forward-looking statements include, but are not limited to, statements concerning: anticipated effects of geopolitical events, including the conflicts in the Ukraine and the Middle East and associated sanctions imposed by the U.S. and other countries in response; our plans to develop our proposed drug candidates; our expectations regarding the nature, timing and extent of clinical trials and proposed clinical trials; our expectations regarding the timing for proposed submissions of regulatory filings; our expectations regarding the nature, timing and extent of collaboration arrangements; the expected results pursuant to collaboration arrangements, including the receipts of future payments that may arise pursuant to collaboration arrangements; the outcome of our plans to obtain regulatory approval of our drug candidates; the outcome of our plans for the commercialization of our drug candidates; our plans to address certain markets, engage third party manufacturers, and evaluate additional drug candidates for subsequent commercial development along with the likelihood and extent of competition to our drug candidates; our plans to advance innovative immune-oncology technologies addressing hard to treat oncology indications; expectations regarding our Deoxyribonuclease (“DNase”) platform, such as regarding the DNase platform being in development for the treatment of solid tumors and being aimed at improving outcomes of existing treatments, including immunotherapies, by targeting neutrophil extracellular traps (“NETs”); our expectations to focus our efforts and resources on advancing the DNase platform into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors; and our expectations regarding our PolyXen® platform, including concerning our plans to leverage the platform.

In some cases, these statements may be identified by terminology such as “may,” “will,” “would,” “could,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “seek,” “approximately,” “intend,” “predict,” “potential,” “projects,” or “continue,” or the negative of such terms and other comparable terminology. Although we believe that the expectations reflected in the forward-looking statements contained herein are reasonable, we cannot guarantee future results, the levels of activity, performance or achievements. These statements involve known and unknown risks and uncertainties that may cause our or our industry’s results, levels of activity, performance or achievements to be materially different from those expressed or implied by forward-looking statement.

This prospectus should be read together with our financial statements and related notes thereto incorporated by reference in this prospectus. The forward-looking statements made herein are based on our current expectations, involve a number of risks and uncertainties and should not be considered as guarantees of future performance. This prospectus, any prospectus supplement and the other documents we have filed with the SEC that are incorporated by reference herein contain trend analysis and other forward-looking statements. Any statements that are not statements of historical facts are forward-looking statements.

You should carefully consider these risks before you make an investment decision with respect to our securities, along with the following factors that could cause actual results to differ materially from our forward-looking statements:

- uncertainty of the expected financial performance of the Company;
- failure to realize the anticipated potential of the DNase or PolyXen technologies;
- our ability to implement our business strategy;
- our failure to maintain compliance with the continued listing requirements of Nasdaq;
- our need to raise additional working capital in the future for the purpose of further developing our pipeline and to continue as a going concern;
- our ability to finance our business;
- our ability to successfully execute, manage and integrate key acquisitions and mergers;
- product development and commercialization risks, including our ability to successfully develop the DNase technology;
- the impact of adverse safety outcomes and clinical trial results for our therapies;
- our ability to secure and maintain a manufacturer for our technologies;
- the impact of new therapies and new uses of existing therapies on the competitive environment;
- our ability to successfully commercialize our current and future drug candidates;
- our ability to achieve milestone and other payments associated with our current and future co-development collaborations and strategic arrangements;
- our reliance on consultants, advisors, vendors and business partners to conduct work on our behalf;
- the impact of new technologies on our drug candidates and our competition;
- changes in laws or regulations of governmental agencies;
- interruptions or cancellation of existing contracts;
- impact of competitive products and pricing;
- product demand and market acceptance and risks;
- the presence of competitors with greater financial resources;
- continued availability of supplies or materials used in manufacturing at the current prices;
- the ability of management to execute plans and motivate personnel in the execution of those plans;
- our ability to attract and retain key personnel;
- costs, diversion and other adverse effects of the actions of activist shareholders;
- adverse publicity related to our products or the Company itself;
- adverse claims relating to our intellectual property;
- the adoption of new, or changes in, accounting principles;
- the costs inherent with complying with statutes and regulations applicable to public reporting companies, such as the Sarbanes-Oxley Act of 2002;
- other new lines of business that we may enter in the future;
- general economic and business conditions, as well as inflationary trends and financial market instability or disruptions to the banking system due to bank failures;
- the impact of natural disasters or public health emergencies, such as the COVID-19 global pandemic, and geopolitical events, such as the Russian invasion of Ukraine and conflict in the Middle East, and related sanctions and other economic disruptions or concerns, on our financial condition and results of operations; and
- other factors set forth in the Risk Factors section of our Annual Report on Form 10-K and in subsequent filings with the Securities and Exchange Commission (“SEC”).

These factors are not necessarily all of the important factors that could cause actual results to differ materially from those expressed in the forward-looking statements in this prospectus. Other unknown or unpredictable factors also could have material adverse effects on our future results, including, but not limited to, those discussed in the section titled “Risk Factors.” The forward-looking statements in this prospectus are made only as of the date of this prospectus, and we do not undertake any obligation to publicly update any forward-looking statements to reflect subsequent events or circumstances. We intend that all forward-looking statements be subject to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995.

## PROSPECTUS SUMMARY

*This summary highlights selected information and does not contain all the information that is important to you. You should carefully read this prospectus, including the “[Risk Factors](#)” section and the consolidated financial statements and related notes included in this prospectus or incorporated by reference into this prospectus, any applicable prospectus supplement and the documents to which we have referred to in the “Incorporation of Certain Documents by Reference” section below for information about us and our financial statements.*

### Overview

We are a biopharmaceutical company focused on advancing innovative immune-oncology technologies addressing hard to treat cancers. Our proprietary DNase platform is designed to improve outcomes of existing treatments, including immunotherapies, by targeting NETs, which have been implicated in cancer progression and resistance to cancer treatments. We are currently focused on advancing our systemic DNase program into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors.

Additionally, we have partnered with biotechnology and pharmaceutical companies to develop our proprietary drug delivery platform, PolyXen, and receive royalty payments under an exclusive license arrangement in the field of blood coagulation disorders. PolyXen is an enabling platform technology for protein and peptide drug delivery. It uses the biological polymer polysialic acid (“PSA”) to prolong the drug's half-life and potentially improve the stability of therapeutic peptides and proteins.

We incorporate our patented and proprietary technologies into drug candidates currently under development with biotechnology and pharmaceutical industry collaborators to create what we believe will be the next-generation biologic drugs with improved pharmacological properties over existing therapeutics. Our drug candidates have resulted from our research activities or that of our collaborators and are in the development stage. As a result, we continue to commit a significant amount of our resources to our research and development activities and anticipate continuing to do so for the near future. To date, none of our drug candidates have received regulatory marketing authorization or approval in the U.S. by the Food and Drug Administration (“FDA”) nor in any other countries or territories by any applicable agencies. As noted above, we are receiving ongoing royalties pursuant to a license of our PolyXen technology to an industry partner.

Although we hold a broad patent portfolio, the focus of our internal efforts in 2023 and 2024 was on the licensing and advancement of our DNase platform.

### Corporate Information

We were incorporated under the laws of the State of Nevada in August 2011. Our corporate headquarters and operation facilities are located at 945 Concord Street, Framingham, Massachusetts 01701. Our telephone number is (781) 778-7720. We maintain a website at [www.xeneticbio.com](http://www.xeneticbio.com). Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and amendments to those reports are available, free of charge, on or through our website as soon as practicable after we electronically file such forms, or furnish them to, the SEC. The SEC maintains an Internet website located at [www.sec.gov](http://www.sec.gov) that contains the information we file or furnish electronically with the SEC.

### The Offering

Under this prospectus, we may offer and sell to the public in one or more series or issuances of common stock, preferred stock, depository shares, debt securities, warrants, units and rights with an aggregate offering price not to exceed \$50,000,000.

## RISK FACTORS

Investing in our securities involves risks. You should carefully consider the risks described under “[Risk Factors](#)” in our most recent Annual Report on Form 10-K, as amended, and in any subsequent public filings with the SEC, including our Quarterly Reports on Form 10-Q (which descriptions are incorporated by reference herein), as well as the other information contained or incorporated by reference in this prospectus or in any prospectus supplement hereto before making a decision to invest in our securities. See “[Where You Can Find More Information](#)” and “[Incorporation of Certain Documents by Reference](#)” below.

## USE OF PROCEEDS

Unless otherwise indicated in an accompanying prospectus supplement, we intend to use all the net proceeds from the sale of the securities offered by this prospectus and any related prospectus supplement for general corporate purposes in accordance with our objectives and strategies described in our most recent Annual Report on Form 10-K, as amended, and other filings with the SEC, which may include:

- acquisitions of assets and businesses;
- funding of ongoing development programs and clinical trials;
- repayment of indebtedness outstanding at that time; and
- general working capital.

Any specific allocation of the net proceeds of an offering of securities to a specific purpose will be determined at the time of such offering and will be described in the related supplement to this prospectus.



## DESCRIPTION OF CAPITAL STOCK

*The following is a summary of the rights and preferences of our capital stock. While we believe that the following description covers the material terms of our capital stock, the description may not contain all of the information that is important to you. We encourage you to read carefully this entire prospectus, any future related prospectus supplement and certificates of designation relating to the securities, as applicable, our articles of incorporation, as amended (the “charter”) and amended and restated bylaws (the “bylaws”) and the other documents we refer to for a more complete understanding of our capital stock. Copies of our charter and bylaws are incorporated by reference as exhibits to the registration statement of which this prospectus is a part. See [“Where You Can Find More Information”](#) and [“Incorporation of Certain Documents by Reference.”](#)*

### **General**

Our charter provides that we may issue up to 10,000,000 shares of common stock, \$0.001 par value per share, and 10,000,000 shares of preferred stock, \$0.001 par value per share, 1,000,000 of which are designated as Series A Preferred Stock, 2,500,000 of which are designated as Series B Preferred Stock, and 6,500,000 of which shares of preferred stock are undesignated. Under Nevada law, stockholders are not generally liable for our debts or obligations.

### **Shares of Common Stock**

#### ***Voting Rights***

Our common stock is entitled to one vote per share on all matters submitted to a vote of the stockholders, including the election of directors. Except as otherwise required by law or provided in any resolution adopted by our board of directors with respect to any series of preferred stock, the holders of our common stock will possess all voting power. Generally, all matters to be voted on by stockholders must be approved by a majority (or, in the case of election of directors, by a plurality) of the votes entitled to be cast by all shares of our common stock that are present in person or represented by proxy, subject to any voting rights granted to holders of any preferred stock. Our stockholders do not have cumulative voting rights in the election of directors. Holders of our common stock representing 50% of our capital stock issued, outstanding and entitled to vote, represented in person or by proxy, are necessary to constitute a quorum at any meeting of our stockholders. A vote by the holders of a majority of our outstanding shares is required to effectuate certain fundamental corporate changes such as liquidation, merger or an amendment to our charter.

#### ***Dividends***

Subject to the preferential rights of any other class or series of shares of stock created from time to time by our board of directors from time to time, the holders of shares of our common stock will be entitled to such cash dividends, non-cumulative, as may be declared from time to time by our board of directors from funds available therefore. We will not pay any dividends on shares of common stock (other than dividends in the form of common stock) unless and until such time as we pay dividends on our preferred stock on an as-converted basis.

#### ***Liquidation***

Subject to the preferential rights of any other class or series of shares of stock created from time to time by our board of directors, upon liquidation, dissolution or winding up, the holders of shares of our common stock will be entitled to share ratably in the assets of the Company available for distribution to such holders.

### ***Rights and Preferences***

In the event of any merger or consolidation with or into another company in connection with which shares of our common stock are converted into or exchangeable for shares of stock, other securities or property (including cash), all holders of our common stock will be entitled to receive the same kind and amount of shares of stock and other securities and property (including cash). Holders of our common stock have no pre-emptive, conversion, subscription or other rights and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate in the future.

### ***Fully Paid and Nonassessable***

All of our outstanding shares of common stock are duly authorized, validly issued, fully paid and nonassessable.

### **Shares of Preferred Stock**

The following description sets forth general terms and provisions of the preferred stock to which any prospectus supplement may relate. The statements below describing the preferred stock are in all respects subject to and qualified in their entirety by reference to our charter, bylaws, and any certificate of designation, designating terms of a series of preferred stock. The outstanding shares of our preferred stock have been validly issued, fully paid, and non-assessable. Because our board of directors has the power to establish the preferences, powers and rights of each series of preferred stock, our board of directors may afford the holders of any series of preferred stock preferences, powers and rights, voting or otherwise, senior to the rights of our common stockholders. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon a liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change of control of the Company or other corporate action.

The rights, preferences, privileges and restrictions of our outstanding series of preferred stock are, and of each additional series of preferred stock, when and if issued in the future will be, fixed by the certificate of designation relating to the series. A prospectus supplement, relating to each series, will specify the terms of the preferred stock, as follows:

- the title and stated value of the preferred stock;
- the voting rights of the preferred stock, if applicable;
- the preemptive rights of the preferred stock, if applicable;
- the restrictions on alienability of the preferred stock, if applicable;
- the number of shares offered, the liquidation preference per share and the offering price of the shares;
- liability to further calls or assessment of the preferred stock, if applicable;
- the dividend rate(s), period(s) and payment date(s) or method(s) of calculation applicable to the preferred stock;

- the date from which dividends on the preferred stock will accumulate, if applicable;
- the procedures for any auction and remarketing for the preferred stock, if any;
- the provision for a sinking fund, if any, for the preferred stock;
- the provision for and any restriction on redemption, if applicable, of the preferred stock;
- the provision for and any restriction on repurchase, if applicable, of the preferred stock;
- any listing of the preferred stock on any securities exchange;
- the terms and provisions, if any, upon which the preferred stock will be convertible into common stock, including the conversion price (or manner of calculation) and conversion period;
- the terms under which the rights of the preferred stock may be modified, if applicable;
- any other specific terms, preferences, rights, limitations or restrictions of the preferred stock;
- a discussion of certain material federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights upon the liquidation, dissolution or winding-up of our affairs;
- any limitation on issuance of any series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights upon the liquidation, dissolution or winding-up of our affairs; and
- any limitations on direct or beneficial ownership and restrictions on transfer of the preferred stock.

#### **Transfer Agent and Registrar**

The transfer agent and registrar for our common stock and preferred stock is Empire Stock Transfer, Inc.

#### **Restrictions on Transfer**

Transfers of shares of capital stock of the Company shall be made only (i) by entering upon the stock-transfer books of the Company or (ii) by transfer agents designated to transfer shares of capital stock of the Company.

## **Anti-takeover Effects of Certain Provisions of Nevada Law and of Our Charter and Bylaws**

Our charter and bylaws and the Nevada Revised Statutes (the “NRS”) contain provisions that may delay, defer or prevent a change in control or other transaction that might involve a premium price for shares of our common stock or otherwise be in the best interests of our stockholders, including business combination provisions, the ability of our board of directors to authorize undesignated preferred stock, supermajority vote requirements and advance notice requirements for director nominations and stockholder proposals. Likewise, if the provision in the bylaws opting out of the business combination provisions of the NRS were rescinded or if we were to opt in, these provisions of the NRS could have similar anti-takeover effects. See “Nevada Business Combinations Statute” and “Control Share Acquisitions” below.

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

### *Blank Check Authorization*

The NRS permits, if authorized by the Company’s articles of incorporation, as amended, the issuance of blank check preferred stock with preferences, limitations and relative rights determined by a corporation’s board of directors without stockholder approval. The Company’s articles of incorporation, as amended, currently authorizes the issuance of blank check preferred stock, of which 6,500,000 preferred shares are available for future issuance in one or more series to be issued from time to time.

### *No Right to Cumulative Voting*

Pursuant to our bylaws, each of our directors is elected by holders of our common stock entitled to vote and called to serve until the next annual meeting of stockholders when his or her successor is duly elected and qualified. Holders of shares of common stock have no right to cumulative voting in the election of directors. Consequently, at each annual meeting of stockholders, the holders of a plurality of the shares of common stock entitled to vote are able to elect all of our directors. Holders of our preferred stock do not have voting rights, except that holders of our Series B Preferred Stock have certain voting rights under limited circumstances.

### *Removal of Directors*

Our bylaws and charter provide that the number of directors we have may be established by our board of directors but may not be less than 1, nor more than 15. Our bylaws provide that any vacancy may be filled only by a majority of the remaining directors. Any individual appointed to fill such a vacancy will serve until the next annual meeting of stockholders when a successor is duly elected and qualified. Our bylaws further provide that a director may be removed for cause and only by the affirmative vote of the holders of shares entitled to cast at least two thirds of all the votes of common stockholders entitled to be cast generally in the election of directors. This provision, when coupled with the power of our board of directors to fill vacancies on the board of directors, precludes stockholders from (1) removing incumbent directors except upon a substantial affirmative vote and (2) filling the vacancies created by such removal with their own nominees.

The “business combination” provisions of Sections 78.411 to 78.444, inclusive, of the NRS, generally prohibit a Nevada corporation with at least 200 stockholders from engaging in various “combination” transactions with any interested stockholder for a period of two years after the date of the transaction in which the person became an interested stockholder, unless the corporation’s board of directors approves the transaction by which the stockholder becomes an interested stockholder in advance, or the proposed combination in advance of the stockholder becoming an interested stockholder. The proposed combination may be approved after the stockholder becomes an interested stockholder with preapproval by the board of directors and a vote at a special or annual meeting of stockholders holding at least 60 percent of the voting power not owned by the interested stockholder or its affiliates or associates. A “combination” is generally defined to include mergers or consolidations or any sale, lease exchange, mortgage, pledge, transfer, or other disposition, in one transaction or a series of transactions, with an “interested stockholder” (a) having an aggregate market value equal to 5% or more of the aggregate market value of the assets of the corporation, (b) having an aggregate market value equal to 5% or more of the aggregate market value of all outstanding shares of the corporation, or (c) representing 10% or more of the earning power or net income of the corporation. In general, an “interested stockholder” is any person who, together with affiliates and associates, beneficially owns (or within two years, did own) 10% or more of a corporation’s voting stock. After the two-year moratorium period, additional stockholder approvals or fair value requirements must be met by the interested stockholder up to four years after the stockholder became an interested stockholder.

The statute could be used to prohibit or delay mergers or other takeover or change in control attempts and, accordingly, may discourage attempts to acquire our Company even though such a transaction may offer our stockholders the opportunity to sell their stock at a price above the prevailing market price. Our charter states that we have elected not to be governed by the “business combination” provisions, therefore such provisions currently do not apply to us.

#### *Control Share Acquisitions*

The “control share” provisions of Sections 78.378 to 78.3793, inclusive, of the NRS apply to Nevada corporations with at least 200 stockholders, including at least 100 stockholders of record who are Nevada residents, and that conduct business directly or indirectly in Nevada, including through an affiliated corporation. The control share statute prohibits an acquirer, under certain circumstances, from voting its shares of a target corporation’s stock after crossing certain ownership threshold percentages, unless the acquirer obtains approval of the target corporation’s disinterested stockholders. The statute specifies three thresholds: one-fifth or more but less than one-third, one-third but less than a majority, and a majority or more, of the outstanding voting power. Generally, once an acquirer crosses one of the above thresholds, those shares in an offer or acquisition and acquired within 90 days thereof become “control shares” and such control shares are deprived of the right to vote until disinterested stockholders restore the right. These provisions also provide that if control shares are accorded full voting rights and the acquiring person has acquired a majority or more of all voting power, all other stockholders who do not vote in favor of authorizing voting rights to the control shares are entitled to demand payment for the fair value of their shares in accordance with statutory procedures established for dissenters’ rights.

A corporation may elect to not be governed by, or “opt out” of, the control share provisions by making an election in its articles of incorporation or bylaws, provided that the opt-out election must be in place on the 10th day following the date an acquiring person has acquired a controlling interest, that is, crossing any of the three thresholds described above. We have not opted out of the control share statutes, and will be subject to these statutes if we are an “issuing corporation” as defined in such statutes. As we currently have fewer than 100 stockholders of record who are residents of Nevada, we do not believe that we are an “issuing corporation” as defined by the control share statutes.

The effect of the Nevada control share statutes is that the acquiring person, and those acting in association with the acquiring person, will obtain only such voting rights in the control shares as are conferred by a resolution of the stockholders at an annual or special meeting. The Nevada control share law, if applicable, could have the effect of discouraging takeovers of our Company.

### *Meetings of Stockholders*

Pursuant to our bylaws, a meeting of our stockholders for the election of directors and the transaction of any business will be held annually on a date and at the time set by our board of directors. In addition, the board of directors is authorized, with the approval of a majority of the entire board of directors, to call a special meeting of our stockholders.

### *Amendment to Our Charter and Bylaws*

Pursuant to the NRS, our charter may be amended with the approval of the board of directors or the affirmative vote of a majority of the stockholders entitled to vote. In furtherance and not in limitation of the powers conferred by the NRS and our charter, our bylaws expressly authorize our board of directors to adopt, amend and repeal the bylaws. This authority is subject to the power of our stockholders to adopt, amend or repeal the bylaws upon the affirmative vote of the holders of at least two-thirds of the voting power of the issued and outstanding stock entitled to vote generally in the election of directors, voting together as a single class, in addition to the affirmative vote of the holders of any class or series of the shares of capital stock of the Company as may be required by law, our charter, our bylaws or our preferred stock.

### *Dissolution*

Pursuant to the NRS, our dissolution must be approved by the board of directors along with the affirmative vote of the holders of not less than a majority of all of the shares entitled to cast a vote on the matter.

### *Advance Notice of Director Nominations and New Business*

Our bylaws provide that, with respect to an annual meeting of stockholders, nominations of individuals for election to the board of directors and the proposal of other business to be considered by stockholders may be made only (1) pursuant to our notice of the meeting, (2) by or at the direction of our board of directors or (3) by a stockholder who was a stockholder of record at the time of giving his notice who is entitled to vote at the meeting on the election of directors or on the proposal of other business, as the case may be, and has complied with the advance notice provisions set forth in our bylaws.

With respect to special meetings of stockholders, only the business specified in our notice of meeting may be brought before the meeting. Nominations of individuals for election to our board of directors may be made only (1) by or at the direction of our board of directors or (2) provided that the board of directors has determined that directors will be elected at such meeting, by a stockholder who was a stockholder of record at the time of giving his notice and who is entitled to vote at the meeting and has complied with the advance notice provisions set forth in our bylaws.

## DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of common stock, preferred stock or debt securities in one or more series, from time to time. We may issue warrants independently or together with common stock, preferred stock and/or debt securities, and the warrants may be attached to or separate from those securities.

The warrants issued, if any, will be evidenced by warrant certificates issued under one or more warrant agreements, which are contracts between us and an agent for the holders of the warrants. The prospectus supplements relating to any warrants being offered pursuant to this prospectus and any applicable prospectus supplements will contain the specific terms of the warrants, as well as the complete warrant agreements and warrant certificates that contain the terms of the warrants. Forms of warrant agreements and warrant certificates containing the terms of the warrants being offered will be incorporated by reference into the registration statement of which this prospectus is a part from reports we file with the SEC.

## DESCRIPTION OF UNITS

As specified in the applicable prospectus supplement, we may issue units consisting of one or more shares of common stock, shares of preferred stock, depositary shares, warrants, or any combination of such securities.

## DESCRIPTION OF RIGHTS

The following description summarizes only the general features of the rights that we may offer from time to time under this prospectus. The specific terms of a series of rights will be described in the applicable prospectus supplement relating to that series of rights along with any general provisions applicable to that series of rights. We may issue rights to our stockholders to purchase shares of our common stock and/or any of the other securities offered hereby. In connection with any offering of rights, each series of rights may be issued under a separate rights agreement to be entered into between us and a bank or trust company, as rights agent. The following description of the rights and any description of the rights in a prospectus supplement may not be complete and is subject to, and qualified in its entirety by reference to, the underlying rights agreement, which we will file with the SEC at or prior to the time of the sale of the rights. You should refer to, and read this summary together with, the rights agreement and the applicable prospectus supplement to review the terms of a particular series of rights. You can obtain copies of any form of rights agreement or other agreement pursuant to which the rights are issued by following the directions described under the caption “*Where You Can Find More Information.*” The applicable prospectus supplement relating to any rights will describe the terms of the offered rights, including, where applicable, the following:

- the date for determining the persons entitled to participate in the rights distribution;
- the exercise price for the rights;
- the aggregate number or amount of underlying securities purchasable upon exercise of the rights;
- the extent to which the rights are transferable;
- the date on which the right to exercise the rights will commence and the date on which the rights will expire;
- the extent to which the rights include an over-subscription privilege with respect to unsubscribed securities;
- anti-dilution provisions of the rights, if any; and
- any other material terms of the rights, including terms, procedures and limitations relating to the distribution, exchange and exercise of the rights.

Holders may exercise rights as described in the applicable prospectus supplement. Upon receipt of payment and the rights certificate properly completed and duly executed at the corporate trust office of the rights agent or any other office indicated in the prospectus supplement, we will, as soon as practicable, forward the securities purchasable upon exercise of the rights. If less than all of the rights issued in any rights offering are exercised, we may offer any unsubscribed securities directly to persons other than existing stockholders, to or through agents, underwriters or dealers or through a combination of such methods, including pursuant to standby underwriting arrangements, as described in the applicable prospectus supplement.

## DESCRIPTION OF DEPOSITARY SHARES

### General

We may issue depositary shares, each of which would represent a fractional interest of a share of a particular series of preferred stock. We will deposit shares of preferred stock represented by depositary shares under a separate deposit agreement among the Company, a preferred stock depositary and the holders of the depositary shares. Subject to the terms of the deposit agreement, each owner of a depositary share will possess, in proportion to the fractional interest of a share of preferred stock represented by the depositary share, all the rights and preferences of the preferred stock represented by the depositary shares. Depositary receipts will evidence the depositary shares issued pursuant to the deposit agreement. Immediately after the Company issues and delivers preferred stock to a preferred stock depositary, the preferred stock depositary will issue the depositary receipts.

### Dividends and Other Distributions

The depositary will distribute all cash dividends on the preferred stock to the record holders of the depositary shares. Holders of depositary shares generally must file proofs, certificates and other information and pay charges and expenses of the depositary in connection with distributions. If a distribution on the preferred stock is other than in cash and it is feasible for the depositary to distribute the property it receives, the depositary will distribute the property to the record holders of the depositary shares. If such a distribution is not feasible, the depositary, with our approval, may sell the property and distribute the net proceeds from the sale to the holders of the depositary shares.

### Withdrawal of Stock

Unless we have previously called the underlying preferred stock for redemption or the holder of the depositary shares has converted such shares, a holder of depositary shares may surrender them at the corporate trust office of the depositary in exchange for whole or fractional shares of the underlying preferred stock together with any money or other property represented by the depositary shares. Once a holder has exchanged the depositary shares, the holder may not redeposit the preferred stock and receive depositary shares again. If a depositary receipt presented for exchange into preferred stock represents more shares of preferred stock than the number to be withdrawn, the depositary will deliver a new depositary receipt for the excess number of depositary shares.

### Redemption of Depositary Shares

Whenever we redeem shares of preferred stock held by a depositary, the depositary will redeem the corresponding amount of depositary shares with funds it receives from us for the preferred stock. The depositary will notify the record holders of the depositary shares to be redeemed not less than 30 days nor more than 60 days before the date fixed for redemption at the holders' addresses appearing in the depositary's books. The redemption price per depositary share will be equal to the applicable fraction of the redemption price and any other amounts payable with respect to the preferred stock. If we intend to redeem less than all of the underlying preferred stock, we and the depositary will select the depositary shares to be redeemed on as nearly a pro rata basis as practicable without creating fractional depositary shares or by any other equitable method determined by us.

On the redemption date:

- all dividends relating to the shares of preferred stock called for redemption will cease to accrue;
- we and the depositary will no longer deem the depositary shares called for redemption to be outstanding; and
- all rights of the holders of the depositary shares called for redemption will cease, except the right to receive any money payable upon the redemption and any money or other property to which the holders of the depositary shares are entitled upon redemption.



### **Voting of the Preferred Stock**

When a depositary receives notice regarding a meeting at which the holders of the underlying preferred stock have the right to vote, it will mail that information to the holders of the depositary shares. Each record holder of depositary shares on the record date may then instruct the depositary to exercise its voting rights for the amount of preferred stock represented by that holder's depositary shares. The depositary will vote in accordance with these instructions. The depositary will abstain from voting to the extent it does not receive specific instructions from the holders of depositary shares. A depositary will not be responsible for any failure to carry out any instruction to vote, or for the manner or effect of any vote, as long as any action or non-action is in good faith and does not result from negligence or willful misconduct of the depositary.

### **Liquidation Preference**

In the event of our liquidation, dissolution or winding up, a holder of depositary shares will receive the fraction of the liquidation preference accorded each share of underlying preferred stock represented by the depositary share, in the event such underlying preferred stock is entitled to any such liquidation preference.

### **Conversion of Preferred Stock**

Depositary shares will not themselves be convertible into common stock or any other securities or property of the Company. However, if the underlying preferred stock is convertible, holders of depositary shares may surrender them to the depositary with written instructions to convert the preferred stock represented by their depositary shares into whole shares of common stock, other shares of our preferred stock or other shares of stock, as applicable. Upon receipt of these instructions and any amounts payable in connection with a conversion, we will convert the preferred stock using the same procedures as those provided for delivery of preferred stock. If a holder of depositary shares converts only part of its depositary shares, the depositary will issue a new depositary receipt for any depositary shares not converted. We will not issue fractional shares of common stock upon conversion. If a conversion will result in the issuance of a fractional share, we will pay an amount in cash equal to the value of the fractional interest based upon the closing price of the common stock on the last business day prior to the conversion.

### **Amendment and Termination of a Deposit Agreement**

The Company and the depositary may amend any form of depositary receipt evidencing depositary shares and any provision of a deposit agreement. However, unless the existing holders of at least two-thirds of the applicable depositary shares then outstanding have approved the amendment, we and the depositary may not make any amendment that:

- would materially and adversely alter the rights of the holders of depositary shares; or
- would be materially and adversely inconsistent with the rights granted to the holders of the underlying preferred stock.

Subject to exceptions in the deposit agreement and except in order to comply with applicable law, no amendment may impair the right of any holders of depositary shares to surrender their depositary shares with instructions to deliver the underlying preferred stock and all money and other property represented by the depositary shares. Every holder of outstanding depositary shares at the time any amendment becomes effective who continues to hold the depositary shares will be deemed to consent and agree to the amendment and to be bound by the amended deposit agreement.

We may terminate a deposit agreement upon not less than 30 days prior written notice to the depositary if a majority of each series of preferred stock affected by the termination consents to the termination.

In addition, a deposit agreement will automatically terminate if:

- we have redeemed all underlying preferred stock subject to the agreement;
- a final distribution of the underlying preferred stock in connection with any liquidation, dissolution or winding up has occurred, and the depositary has distributed the distribution to the holders of the depositary shares; or
- each share of the underlying preferred stock has been converted into other capital stock of the Company not represented by depositary shares.

#### **Expenses of a Preferred Stock Depositary**

We will pay all transfer and other taxes and governmental charges and expenses arising in connection with a deposit agreement. In addition, we will generally pay the fees and expenses of a depositary in connection with the performance of its duties. However, holders of depositary shares will pay the fees and expenses of a depositary for any duties requested by the holders that the deposit agreement does not expressly require the depositary to perform.

#### **Resignation and Removal of Depositary**

A depositary may resign at any time by delivering to us notice of its election to resign. We may also remove a depositary at any time. Any resignation or removal will take effect upon the appointment of a successor depositary. We will appoint a successor depositary within 60 days after delivery of the notice of resignation or removal. The successor must be a bank or trust company with its principal office in the U.S. and have a combined capital and surplus of at least \$50 million.

#### **Miscellaneous**

The depositary will forward to the holders of depositary shares any reports and communications from us with respect to the underlying preferred stock. Neither the depositary nor the Company will be liable if any law or any circumstances beyond their control prevent or delay them from performing their obligations under a deposit agreement. The obligations of the Company and a depositary under a deposit agreement will be limited to performing their duties in good faith and without negligence in regard to voting of preferred stock, gross negligence or willful misconduct. Neither the Company nor a depositary must prosecute or defend any legal proceeding with respect to any depositary shares or the underlying preferred stock unless they are furnished with satisfactory indemnity.

The Company and any depositary may rely on the written advice of counsel or accountants, or information provided by persons presenting shares of preferred stock for deposit, holders of depositary shares or other persons they believe in good faith to be competent, and on documents they believe in good faith to be genuine and signed by a proper party. In the event a depositary receives conflicting claims, requests or instructions from us and any holders of depositary shares, the depositary will be entitled to act on the claims, requests or instructions received from us.

#### **Depositary**

The prospectus supplement will identify the depositary for the depositary shares.

#### **Listing of the Depositary Shares**

The applicable prospectus supplement will specify whether or not the depositary shares will be listed on any securities exchange.

## DESCRIPTION OF DEBT SECURITIES

### General

The following description of the terms of our senior debt securities and subordinated debt securities (together, referred to as the “debt securities”), sets forth certain general terms and provisions of the debt securities to which any prospectus supplement may relate. Unless otherwise noted, the general terms and provisions of our debt securities discussed below apply to both our senior debt securities and our subordinated debt securities. Our debt securities may be issued from time to time in one or more series. The particular terms of any series of debt securities and the extent to which the general provisions may apply to a particular series of debt securities will be described in the prospectus supplement relating to that series.

The senior debt securities will be issued under an indenture (the “senior indenture”) between us and a Senior Indenture trustee (the “Senior Indenture Trustee”). The subordinated debt securities will be issued under an indenture (the “subordinated indenture” and, together with the senior indenture, the “indentures”) between us and a Subordinated Indenture trustee (the “Subordinated Indenture Trustee”). The Senior Indenture Trustee and the Subordinated Indenture Trustee are both referred to, individually, as the “trustee”. The senior debt securities will constitute our unsecured and unsubordinated obligations and the subordinated debt securities will constitute our unsecured and subordinated obligations. A detailed description of the subordination provisions is provided below under the caption “- *Ranking and Subordination - Subordination.*” In general, however, if we declare bankruptcy, holders of the senior debt securities will be paid in full before the holders of subordinated debt securities will receive anything.

The statements set forth below are brief summaries of certain provisions contained in the indentures, which summaries do not purport to be complete and are qualified in their entirety by reference to the forms of indentures, which are filed as exhibits to the registration statement of which this prospectus forms a part. Terms used herein that are otherwise not defined shall have the meanings given to them in the indentures. Such defined terms shall be incorporated herein by reference.

The indentures will not limit the amount of debt securities that may be issued under the applicable indenture, and debt securities may be issued under the applicable indenture up to the aggregate principal amount that may be authorized from time to time by us. Any such limit applicable to a particular series will be specified in the prospectus supplement relating to that series.

The prospectus supplement relating to any series of debt securities in respect of which this prospectus is being delivered will contain the following terms, among others, as applicable, for each such series of debt securities:

- the designation and issue date of the debt securities;
- the date or dates on which the principal amount of the debt securities is payable;
- the rate or rates (or manner of calculation thereof), if any, per annum at which the debt securities will bear interest, if any, the date or dates from which interest will accrue and the interest payment date or dates for the debt securities;
- any limit upon the aggregate principal amount of the debt securities which may be authenticated and delivered under the applicable indenture;
- the period or periods within which, the redemption price or prices or the repayment price or prices, as the case may be, at which, and the terms and conditions upon which, the debt securities may be redeemed at the Company’s option or the option of the holder of such debt securities;
- the obligation, if any, of the Company to purchase the debt securities pursuant to any sinking fund or analogous provisions or at the option of a holder of such debt securities and the period or periods within which, the price or prices at which and the terms and conditions upon which such debt securities will be purchased, in whole or in part, pursuant to such obligation;
- if other than denominations of \$1,000 and any integral multiple thereof, the denominations in which the debt securities will be issuable;

- provisions, if any, with regard to the conversion or exchange of the debt securities, at the option of the holders of such debt securities or the Company, as the case may be, for or into new securities of a different series, common stock or other securities;
- if other than U.S. dollars, the currency or currencies or units based on or related to currencies in which the debt securities will be denominated and in which payments of principal of, and any premium and interest on, such debt securities shall or may be payable;
- if the principal of (and premium, if any) or interest, if any, on the debt securities are to be payable, at the election of the Company or a holder of such debt securities, in a currency (including a composite currency) other than that in which such debt securities are stated to be payable, the period or periods within which, and the terms and conditions upon which, such election may be made;
- if the amount of payments of principal of (and premium, if any) or interest, if any, on the debt securities may be determined with reference to an index based on a currency (including a composite currency) other than that in which such debt securities are stated to be payable, the manner in which such amounts shall be determined;
- provisions, if any, related to the exchange of the debt securities, at the option of the holders of such debt securities, for other securities of the same series of the same aggregate principal amount or of a different authorized series or different authorized denomination or denominations, or both;
- the portion of the principal amount of the debt securities, if other than the principal amount thereof, which shall be payable upon declaration of acceleration of the maturity thereof as more fully described under the section “*Events of Default, Notice and Waiver*” below;
- whether the debt securities will be issued in the form of global securities and, if so, the identity of the depositary with respect to such global securities;
- if the debt securities will be guaranteed, the terms and conditions of such guarantees and provisions for the accession of the guarantors to certain obligations under the applicable indenture;
- with respect to subordinated debt securities only, the amendment or modification of the subordination provisions in the subordinated indenture with respect to the debt securities; and
- any other specific terms.

We may issue debt securities of any series at various times and we may reopen any series for further issuances from time to time without notice to existing holders of securities of that series.

Some of the debt securities may be issued as original issue discount debt securities. Original issue discount debt securities bear no interest or bear interest at below-market rates. These are sold at a discount below their stated principal amount. If we issue these securities, the prospectus supplement relating to such series of debt securities will describe any special tax, accounting or other information which we think is important. We encourage you to consult with your own tax and financial advisors on these important matters.

Unless we specify otherwise in the applicable prospectus supplement relating to such series of debt securities, the covenants contained in the indentures will not provide special protection to holders of debt securities if we enter into a highly leveraged transaction, recapitalization or restructuring.

Unless otherwise set forth in the prospectus supplement relating to such series of debt securities, interest on outstanding debt securities will be paid to holders of record on the date that is 15 days prior to the date such interest is to be paid or, if not a business day, the next preceding business day. Unless otherwise specified in the prospectus supplement, debt securities will be issued in fully registered form only. Unless otherwise specified in the prospectus supplement, the principal amount of the debt securities will be payable at the corporate trust office of the trustee in New York, New York. The debt securities may be presented for transfer or exchange at such office unless otherwise specified in the prospectus supplement, subject to the limitations provided in the applicable indenture, without any service charge, but we may require payment of a sum sufficient to cover any tax or other governmental charges payable in connection therewith.

## **Ranking and Subordination**

### ***General***

The subordinated debt securities and the related guarantees will effectively rank junior in right of payment to any of our or the guarantors' current and future secured obligations to the extent of the value of the assets securing such obligations. The debt securities and the guarantees will be effectively subordinated to all existing and future liabilities, including indebtedness and trade payables, of our non-guarantor subsidiaries. Unless otherwise set forth in the prospectus supplement relating to such series of debt securities, the indentures will not limit the amount of unsecured indebtedness or other liabilities that can be incurred by our non-guarantor subsidiaries.

### ***Ranking of Debt Securities***

The senior debt securities described in this prospectus will be unsecured, senior obligations of the Company and will rank equally with the Company's other unsecured and unsubordinated obligations. Any guarantees of the senior debt securities will be unsecured and senior obligations of each of the guarantors, and will rank equally with all other unsecured and unsubordinated obligations of such guarantors. The subordinated debt securities will be unsecured, subordinated obligations and any guarantees of the subordinated debt securities will be unsecured and subordinated obligations of each of the guarantors.

### ***Subordination***

If issued, the indebtedness evidenced by the subordinated debt securities will be subordinate to the prior payment in full of all our Senior Indebtedness (as defined below). During the continuance beyond any applicable grace period of any default in the payment of principal, premium, interest or any other payment due on any of our Senior Indebtedness, we may not make any payment of principal of, or premium, if any, or interest on the subordinated debt securities. In addition, upon any payment or distribution of our assets upon any dissolution, winding up, liquidation or reorganization, the payment of the principal of, or premium, if any, and interest on the subordinated debt securities will be subordinated to the extent provided in the subordinated indenture in right of payment to the prior payment in full of all our Senior Indebtedness. Because of this subordination, if we dissolve or otherwise liquidate, holders of our subordinated debt securities may receive less, ratably, than holders of our Senior Indebtedness. The subordination provisions do not prevent the occurrence of an event of default under the subordinated indenture.

The subordination provisions also apply in the same way to any guarantor with respect to the Senior Indebtedness of such guarantor.

The term "Senior Indebtedness" of a person means with respect to such person the principal of, premium, if any, interest on, and any other payment due pursuant to any of the following, whether outstanding on the date of the subordinated indenture or incurred by that person in the future:

- all of the indebtedness of that person for borrowed money, including any indebtedness secured by a mortgage or other lien which is (1) given to secure all or part of the purchase price of property subject to the mortgage or lien, whether given to the vendor of that property or to another lender, or (2) existing on property at the time that person acquires it;
- all of the indebtedness of that person evidenced by notes, debentures, bonds or other similar instruments sold by that person for money;
- all of the lease obligations which are capitalized on the books of that person in accordance with generally accepted accounting principles;
- all indebtedness of others of the kinds described in the first two bullet points above and all lease obligations of others of the kind described in the third bullet point above, in each case, that the person, in any manner, assumes or guarantees or that the person in effect guarantees through an agreement to purchase, whether that agreement is contingent or otherwise; and
- all renewals, extensions or refunds of indebtedness of the kinds described in the first, second or fourth bullet point above and all renewals or extensions of leases of the kinds described in the third or fourth bullet point above; unless, in the case of any particular indebtedness, lease, renewal, extension or refunding, the instrument or lease creating or evidencing it or the assumption or guarantee relating to it expressly provides that such indebtedness, lease, renewal, extension or refunding is not superior in right of payment to the subordinated debt securities. Our senior debt securities, and any unsubordinated guarantee obligations of ours or any guarantor to which we and the guarantors are a party, including the guarantors' guarantees of our debt securities and other indebtedness for borrowed money, constitute Senior Indebtedness for purposes of the subordinated indenture.

### **Consolidation, Merger, Conveyance or Transfer on Certain Terms**

Except as described in the applicable prospectus supplement relating to such debt securities, we will not consolidate with or merge into any other entity or convey or transfer our properties and assets substantially as an entirety to any entity, unless:

- (1) the entity formed by such consolidation or into which we are merged or the entity that acquires by conveyance or transfer our properties and assets substantially as an entirety shall be organized and existing under the laws of the U.S. or any state or the District of Columbia, and will expressly assume, by supplemental indenture, executed and delivered to the trustee, in form reasonably satisfactory to the trustee, the due and punctual payment of the principal of (and premium, if any) and interest on all the debt securities and the performance of every covenant of the applicable indenture (as supplemented from time to time) on our part to be performed or observed;
- (2) immediately after giving effect to such transaction, no Event of Default (as defined below), and no event which, after notice or lapse of time, or both, would become an Event of Default, shall have happened and be continuing; and
- (3) we have delivered to the trustee an officers' certificate and an opinion of counsel each stating that such consolidation, merger, conveyance or transfer and such supplemental indenture comply with the requirements set forth in paragraphs (1) and (2) above and that all conditions precedent relating to such transaction have been complied with.

Upon any consolidation or merger, or any conveyance or transfer of our properties and assets substantially as an entirety as set forth above, the successor person formed by such consolidation or into which we are merged or to which such conveyance or transfer is made shall succeed to, and be substituted for, and may exercise every right and power of ours under the applicable indenture with the same effect as if such successor had been named in the applicable indenture. In the event of any such conveyance or transfer, we, as the predecessor, shall be discharged from all obligations and covenants under the applicable indenture and the debt securities issued under such indenture and may be dissolved, wound up or liquidated at any time thereafter.

### **Certain Covenants**

Any covenants pertaining to a series of debt securities will be set forth in a prospectus supplement relating to such series of debt securities.

Except as described in the prospectus and any applicable prospectus supplement relating to such series of debt securities, the indentures and the debt securities do not contain any covenants or other provisions designed to afford holders of debt securities protection in the event of a recapitalization or highly leveraged transaction involving us.

### **Certain Definitions**

The following are certain of the terms defined in the indentures:

"Comparable Treasury Issue" means, with respect to the debt securities, the U.S. Treasury security selected by an Independent Investment Banker as having a maturity comparable to the remaining term, or the Remaining Life, of the debt securities being redeemed that would be utilized, at the time of selection and in accordance with customary financial practice, in pricing new issues of corporate debt securities of comparable maturity to the Remaining Life of such debt securities.

"Comparable Treasury Price" means, with respect to any redemption date for the debt securities: (1) the average of two Reference Treasury Dealer Quotations for that redemption date, after excluding the highest and lowest of four such Reference Treasury Dealer Quotations; or (2) if the trustee obtains fewer than four Reference Treasury Dealer Quotations, the average of all quotations obtained by the trustee.

"GAAP" means generally accepted accounting principles as such principles are in effect in the U.S. as of the date of the applicable indenture.

“Independent Investment Banker” means one of the Reference Treasury Dealers, to be appointed by us.

“Reference Treasury Dealer” means four primary U.S. Government securities dealers to be selected by us.

“Reference Treasury Dealer Quotations” means, with respect to each Reference Treasury Dealer and any redemption date, the average, as determined by the trustee, of the bid and asked prices for the Comparable Treasury Issue, expressed in each case as a percentage of its principal amount, quoted in writing to the trustee by such Reference Treasury Dealer at 3:00 p.m., New York City time, on the third business day preceding such redemption date.

“Remaining Scheduled Payments” means, with respect to each debt security to be redeemed, the remaining scheduled payments of the principal thereof and interest thereon that would be due after the related redemption date but for such redemption; provided, however, that, if such redemption date is not an interest payment date with respect to such debt security, the amount of the next succeeding scheduled interest payment thereon will be deemed to be reduced by the amount of interest accrued thereon to such redemption date.

“Significant Subsidiary” means any Subsidiary which would be a “significant subsidiary” as defined in Rule 1-02 of Regulation S-X, promulgated pursuant to the Securities Act, as in effect on the date of the applicable indenture.

“Subsidiary” means, with respect to any person, any corporation more than 50% of the voting stock of which is owned directly or indirectly by such person, and any partnership, association, joint venture or other entity in which such person owns more than 50% of the equity interests or has the power to elect a majority of the board of directors or other governing body.

“Treasury Rate” means, with respect to any redemption date for the debt securities: (1) the yield, under the heading which represents the average for the immediately preceding week, appearing in the most recently published statistical release designated “H.15(5 19)” or any successor publication which is published weekly by the Board of Governors of the Federal Reserve System and which establishes yields on actively traded U.S. Treasury debt securities adjusted to constant maturity under the caption “Treasury Constant Maturities,” for the maturity corresponding to the Comparable Treasury Issue; provided that if no maturity is within three months before or after the maturity date for the debt securities, yields for the two published maturities most closely corresponding to the Comparable Treasury Issue will be determined and the Treasury Rate will be interpolated or extrapolated from those yields on a straight line basis, rounding to the nearest month; or (2) if that release, or any successor release, is not published during the week preceding the calculation date or does not contain such yields, the rate per annum equal to the semiannual equivalent yield to maturity of the Comparable Treasury Issue, calculated using a price for the Comparable Treasury Issue (expressed as a percentage of its principal amount) equal to the Comparable Treasury Price for that redemption date. The Treasury Rate will be calculated on the third business day preceding the redemption date.

#### **Optional Redemption**

Unless we specify otherwise in the applicable prospectus supplement, we may redeem any of the debt securities as a whole at any time or in part from time to time, at our option, on at least 15 days, but not more than 45 days, prior notice mailed to the registered address of each holder of the debt securities to be redeemed, at respective redemption prices equal to the greater of:

- 100% of the principal amount of the debt securities to be redeemed, and
- the sum of the present values of the Remaining Scheduled Payments (as defined below) discounted to the redemption date, on a semi-annual basis, assuming a 360 day year consisting of twelve 30 day months, at the Treasury Rate plus the number, if any, of basis points specified in the applicable prospectus supplement; plus, in each case, accrued interest to the date of redemption that has not been paid, such redemption price referred to as the “Redemption Price”.

On and after the redemption date, interest will cease to accrue on the debt securities or any portion thereof called for redemption, unless we default in the payment of the Redemption Price, and accrued interest. On or before the redemption date, we shall deposit with a paying agent, or the applicable trustee, money sufficient to pay the Redemption Price of and accrued interest on the debt securities to be redeemed on such date. If we elect to redeem less than all of the debt securities of a series, then the trustee will select the particular debt securities of such series to be redeemed in a manner it deems appropriate and fair.

## Defeasance

Except as otherwise set forth in the prospectus supplement relating to such series of debt securities, each indenture will provide that we, at our option,

- (a) will be discharged from any and all obligations in respect of any series of debt securities (except in each case for certain obligations to register the transfer or exchange of debt securities, replace stolen, lost or mutilated debt securities, maintain paying agencies and hold monies for payment in trust), or
- (b) need not comply with any restrictive covenants described in a prospectus supplement relating to such series of debt securities, the guarantors will be released from the guarantees and certain Events of Default (other than those arising out of the failure to pay interest or principal on the debt securities of a particular series and certain events of bankruptcy, insolvency and reorganization) will no longer constitute Events of Default with respect to such series of debt securities, in each case, if we deposit with the trustee, in trust, money or the equivalent in securities of the government which issued the currency in which the debt securities are denominated or government agencies backed by the full faith and credit of such government, or a combination thereof, which through the payment of interest thereon and principal thereof in accordance with their terms will provide money in an amount sufficient to pay all the principal (including any mandatory sinking fund payments) of, and interest on, such series on the dates such payments are due in accordance with the terms of such series.

To exercise any such option, we are required, among other things, to deliver to the trustee an opinion of counsel to the effect that the deposit and related defeasance would not cause the holders of such series to recognize income, gain or loss for federal income tax purposes and, in the case of a discharge pursuant to clause (a) above, accompanied by a ruling to such effect received from or published by the U.S. Internal Revenue Service, or IRS.

In addition, we are required to deliver to the trustee an officers' certificate stating that such deposit was not made by us with the intent of preferring the holders over other creditors of ours or with the intent of defeating, hindering, delaying or defrauding creditors of ours or others.

## Events of Default, Notice and Waiver

Except as otherwise set forth in the prospectus supplement relating to such series of debt securities, each indenture will provide that, if an Event of Default specified therein with respect to any series of debt securities issued thereunder shall have happened and be continuing, either the trustee thereunder or the holders of 33 1/3% in aggregate principal amount of the outstanding debt securities of such series (or 33 1/3% in aggregate principal amount of all outstanding debt securities under such indenture, in the case of certain Events of Default affecting all series of debt securities issued under such indenture) may declare the principal of all the debt securities of such series to be due and payable.

Except as otherwise set forth in the prospectus supplement relating to such series of debt securities, an "Event of Default" in respect of any series will be defined in the indentures as being any one of the following events:

- default in payment of principal of, or premium, if any, on, or any sinking or purchase fund or analogous obligation with respect to, debt securities of such series when due at their stated maturity, by declaration or acceleration, when called for redemption or otherwise;
- default for 30 days in payment of any interest installment with respect to such series;
- default for 90 days after written notice to us by the trustee thereunder or by holders of 33 1/3% in aggregate principal amount of the outstanding debt securities of such series in the performance, or breach, of any covenant or warranty pertaining to debt securities of such series; and
- certain events of bankruptcy, insolvency and reorganization with respect to us or any Significant Subsidiary of ours which is organized under the laws of the U.S. or any political sub-division thereof or the entry of an order ordering the winding up or liquidation of our affairs.



Each indenture will provide that the trustee thereunder will, within 90 days after the occurrence of a default with respect to the debt securities of any series issued under such indenture, give to the holders of the debt securities of such series notice of all uncured and unwaived defaults known to it; provided, however, that, except in the case of default in the payment of principal of, premium, if any, or interest, if any, on any of the debt securities of such series, the trustee will be protected in withholding such notice if it in good faith determines that the withholding of such notice is in the interests of the holders of the debt securities of such series. The term “default” for the purpose of this provision means any event which is, or after notice or lapse of time or both would become, an Event of Default with respect to debt securities of such series.

Each indenture will contain provisions entitling the trustee under such indenture, subject to the duty of the trustee during an Event of Default to act with the required standard of care, to be indemnified to its reasonable satisfaction by the holders of the debt securities before proceeding to exercise any right or power under the applicable indenture at the request of holders of such debt securities.

Each indenture will provide that the holders of a majority in aggregate principal amount of the outstanding debt securities of any series issued under such indenture may direct the time, method and place of conducting proceedings for remedies available to the trustee or exercising any trust or power conferred on the trustee in respect of such series, subject to certain conditions.

Except as otherwise set forth in the prospectus supplement relating to the debt securities, in certain cases, the holders of a majority in principal amount of the outstanding debt securities of any series may waive, on behalf of the holders of all debt securities of such series, any past default or Event of Default with respect to the debt securities of such series except, among other things, a default not theretofore cured in payment of the principal of, or premium, if any, or interest, if any, on any of the senior debt securities of such series or payment of any sinking or purchase fund or analogous obligations with respect to such senior debt securities.

Each indenture will include a covenant that we will file annually with the trustee a certificate of no default or specifying any default that exists.

#### **Modification of the Indentures**

Except as set forth in the prospectus supplement relating to the debt securities, we and the trustee may, without the consent of the holders of the debt securities issued under the indenture governing such debt securities, enter into indentures supplemental to the applicable indenture for, among others, one or more of the following purposes:

- (1) to evidence the succession of another person to us or to a guarantor, if any, and the assumption by such successor of our or the guarantor’s obligations under the applicable indenture and the debt securities of any series;
- (2) to add to our covenants or those of any guarantor, if any, or to surrender any of our rights or powers or those of any guarantor for the benefit of the holders of debt securities of any or all series issued under such indenture;
- (3) to cure any ambiguity, to correct or supplement any provision in the applicable indenture which may be inconsistent with any other provision therein, or to make any other provisions with respect to matters or questions arising under such indenture;
- (4) to add to the applicable indenture any provisions that may be expressly permitted by the Trust Indenture Act of 1939, as amended, or the TIA, excluding the provisions referred to in Section 316(a)(2) of the TIA as in effect at the date as of which the applicable indenture was executed or any corresponding provision in any similar federal statute hereafter enacted;
- (5) to establish the form or terms of any series of debt securities to be issued under the applicable indenture, to provide for the issuance of any series of debt securities and/or to add to the rights of the holders of debt securities;

- (6) to evidence and provide for the acceptance of any successor trustee with respect to one or more series of debt securities or to add or change any of the provisions of the applicable indenture as shall be necessary to facilitate the administration of the trusts thereunder by one or more trustees in accordance with the applicable indenture;
- (7) to provide any additional Events of Default;
- (8) to provide for uncertificated securities in addition to or in place of certificated securities; provided that the uncertificated securities are issued in registered form for certain federal tax purposes;
- (9) to provide for the terms and conditions of converting those debt securities that are convertible into common stock or another such similar security;
- (10) to secure any series of debt securities;
- (11) to add guarantees in respect of any series or all of the debt securities;
- (12) to make any change necessary to comply with any requirement of the SEC in connection with the qualification of the applicable indenture or any supplemental indenture under the TIA; and
- (13) to make any other change that does not adversely affect the rights of the holders of the debt securities.

No supplemental indenture for the purpose identified in clauses (2), (3) or (5) above may be entered into if to do so would adversely affect the rights of the holders of debt securities of any series issued under the same indenture in any material respect.

Except as set forth in the prospectus supplement relating to such series of debt securities, each indenture will contain provisions permitting us and the trustee under such indenture, with the consent of the holders of a majority in principal amount of the outstanding debt securities of all series issued under such indenture to be affected voting as a single class, to execute supplemental indentures for the purpose of adding any provisions to or changing or eliminating any of the provisions of the applicable indenture or modifying the rights of the holders of the debt securities of such series to be affected, except that no such supplemental indenture may, without the consent of the holders of affected debt securities, among other things:

- change the maturity of the principal of, or the maturity of any premium on, or any installment of interest on, any such debt security, or reduce the principal amount or the interest or any premium of any such debt securities, or change the method of computing the amount of principal or interest on any such debt securities on any date or change any place of payment where, or the currency in which, any debt securities or any premium or interest thereon is payable, or impair the right to institute suit for the enforcement of any such payment on or after the maturity of principal or premium, as the case may be;
- reduce the percentage in principal amount of any such debt securities the consent of whose holders is required for any supplemental indenture, waiver of compliance with certain provisions of the applicable indenture or certain defaults under the applicable indenture;
- modify any of the provisions of the applicable indenture related to (i) the requirement that the holders of debt securities issued under such indenture consent to certain amendments of the applicable indenture, (ii) the waiver of past defaults and (iii) the waiver of certain covenants, except to increase the percentage of holders required to make such amendments or grant such waivers; or
- impair or adversely affect the right of any holder to institute suit for the enforcement of any payment on, or with respect to, such senior debt securities on or after the maturity of such debt securities.

In addition, the subordinated indenture will provide that we may not make any change in the terms of the subordination of the subordinated debt securities of any series in a manner adverse in any material respect to the holders of any series of subordinated debt securities without the consent of each holder of subordinated debt securities that would be adversely affected.

## **The Trustee**

The trustee shall be named in the applicable prospectus supplement.

## **Governing Law**

The indentures will be governed by, and construed in accordance with, the laws of the State of New York.

## **Global Securities**

We may issue debt securities through global securities. A global security is a security, typically held by a depositary, that represents the beneficial interests of a number of purchasers of the security. If we do issue global securities, the following procedures will apply.

We will deposit global securities with the depositary identified in the prospectus supplement. After we issue a global security, the depositary will credit on its book-entry registration and transfer system the respective principal amounts of the debt securities represented by the global security to the accounts of persons who have accounts with the depositary. These account holders are known as “participants.” The underwriters or agents participating in the distribution of the debt securities will designate the accounts to be credited. Only a participant or a person who holds an interest through a participant may be the beneficial owner of a global security. Ownership of beneficial interests in the global security will be shown on, and the transfer of that ownership will be effected only through, records maintained by the depositary and its participants.

We and the trustee will treat the depositary or its nominee as the sole owner or holder of the debt securities represented by a global security. Except as set forth below, owners of beneficial interests in a global security will not be entitled to have the debt securities represented by the global security registered in their names. They also will not receive or be entitled to receive physical delivery of the debt securities in definitive form and will not be considered the owners or holders of the debt securities.

Principal, any premium and any interest payments on debt securities represented by a global security registered in the name of a depositary or its nominee will be made to the depositary or its nominee as the registered owner of the global security. None of us, the trustee or any paying agent will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in the global security or maintaining, supervising or reviewing any records relating to the beneficial ownership interests.

We expect that the depositary, upon receipt of any payments, will immediately credit participants’ accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of the global security as shown on the depositary’s records. We also expect that payments by participants to owners of beneficial interests in the global security will be governed by standing instructions and customary practices, as is the case with the securities held for the accounts of customers registered in “street names,” and will be the responsibility of the participants.

If the depositary is at any time unwilling or unable to continue as depositary and a successor depositary is not appointed by us within 90 days, we will issue registered securities in exchange for the global security. In addition, we may at any time in our sole discretion determine not to have any of the debt securities of a series represented by global securities. In that event, we will issue debt securities of that series in definitive form in exchange for the global securities.

## PLAN OF DISTRIBUTION

We may sell the securities offered by this prospectus from time to time in one or more transactions, including without limitation:

- directly to purchasers;
- through agents;
- to or through underwriters or dealers; or
- through a combination of these methods.

A distribution of the securities offered by this prospectus may also be effected through the issuance of derivative securities, including without limitation, warrants, exchangeable securities, forward delivery contracts and the writing of options.

In addition, the manner in which we may sell some or all of the securities covered by this prospectus includes, without limitation, through:

- a block trade in which a broker-dealer will attempt to sell as agent, but may position or resell a portion of the block, as principal, in order to facilitate the transaction;
- purchases by a broker-dealer, as principal, and resale by the broker-dealer for its account;
- ordinary brokerage transactions and transactions in which a broker solicits purchasers; or
- privately negotiated transactions.

We may also enter into hedging transactions. For example, we may:

- enter into transactions with a broker-dealer or affiliate thereof in connection with which such broker-dealer or affiliate will engage in short sales of securities pursuant to this prospectus, in which case such broker-dealer or affiliate may use common stock received from us to close out its short positions;
- sell securities short and redeliver such securities to close out our short positions;
- enter into option or other types of transactions that require us to deliver common stock to a broker-dealer or an affiliate thereof, who will then resell or transfer the common stock under this prospectus; or
- loan or pledge the common stock to a broker-dealer or an affiliate thereof, who may sell the loaned shares or, in an event of default in the case of a pledge, sell the pledged shares pursuant to this prospectus.

In addition, we may enter into derivative or hedging transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. In connection with such a transaction, the third parties may sell securities covered by and pursuant to this prospectus and an applicable prospectus supplement or pricing supplement, as the case may be. If so, the third party may use securities borrowed from us or others to settle such sales and may use securities received from us to close out any related short positions. We may also loan or pledge securities covered by this prospectus and an applicable prospectus supplement to third parties, who may sell the loaned securities or, in an event of default in the case of a pledge, sell the pledged securities pursuant to this prospectus and the applicable prospectus supplement or pricing supplement, as the case may be.

A prospectus supplement with respect to each series of securities will state the terms of the offering of the securities, including:

- the name or names of any underwriters or agents and the amounts of securities underwritten or purchased by each of them, if any;
- the public offering price or purchase price of the securities and the net proceeds to be received by us from the sale;
- any delayed delivery arrangements;
- any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchange on which the securities may be listed.

The offer and sale of the securities described in this prospectus by us, the underwriters, or the third parties described above may be effected from time to time in one or more transactions, including privately negotiated transactions, either:

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

#### **General**

Any public offering price and any discounts, commissions, concessions or other items constituting compensation allowed or reallocated or paid to underwriters, dealers, agents or remarketing firms may be changed from time to time. Underwriters, dealers, agents and remarketing firms that participate in the distribution of the offered securities may be "underwriters" as defined in the Securities Act. Any discounts or commissions they receive from us and any profits they receive on the resale of the offered securities may be treated as underwriting discounts and commissions under the Securities Act. We will identify any underwriters, agents or dealers and describe their commissions, fees or discounts in the applicable prospectus supplement or pricing supplement, as the case may be.

## **At-the-Market Offerings**

If we reach an agreement with an underwriter on a placement, including the number of shares of stock to be offered in the placement and any minimum price below which sales may not be made, such underwriter would agree to use its commercially reasonable efforts, consistent with its normal trading and sales practices, to try to sell such shares on such terms. Underwriters could make sales in privately negotiated transactions, which may be at a discount to the market price of securities, and/or any other method permitted by law, including sales deemed to be an “at-the-market” offering as defined in Rule 415 promulgated under the Securities Act, sales made directly on the Nasdaq, the existing trading market for our stock, or sales made to or through a market maker other than on an exchange. The name of any such underwriter or agent involved in the offer and sale of our stock, the amounts underwritten or otherwise offered through the underwriter or agent, and the nature of its obligations to take our stock will be described in the applicable prospectus supplement.

## **Underwriters and Agents**

If underwriters are used in a sale, they will acquire the offered securities for their own account. The underwriters may resell the offered securities in one or more transactions, including negotiated transactions. These sales may be made at a fixed public offering price or prices, which may be changed, at market prices prevailing at the time of the sale, at prices related to such prevailing market price or at negotiated prices. We may offer the securities to the public through an underwriting syndicate or through a single underwriter. The underwriters in any particular offering will be identified in the applicable prospectus supplement or pricing supplement, as the case may be.

Unless otherwise specified in connection with any particular offering of securities, the obligations of the underwriters to purchase the offered securities will be subject to certain conditions contained in an underwriting agreement that we will enter into with the underwriters at the time of the sale to them. The underwriters will be obligated to purchase all of the securities of the series offered if any of the securities are purchased, unless otherwise specified in connection with any particular offering of securities. Any initial offering price and any discounts or concessions allowed, reallocated or paid to dealers may be changed from time to time.

We may designate agents to sell the offered securities. Unless otherwise specified in connection with any particular offering of securities, the agents will agree to use their best efforts to solicit purchases for the period of their appointment. We may also sell the offered securities to one or more remarketing firms, acting as principals for their own accounts or as agents for us. These firms will remarket the offered securities upon purchasing them in accordance with a redemption or repayment pursuant to the terms of the offered securities. A prospectus supplement or pricing supplement, as the case may be, will identify any remarketing firm and will describe the terms of its agreement, if any, with us and its compensation.

In connection with offerings made through underwriters or agents, we may enter into agreements with such underwriters or agents pursuant to which we receive our outstanding securities in consideration for the securities being offered to the public for cash. In connection with these arrangements, the underwriters or agents may also sell securities covered by this prospectus to hedge their positions in these outstanding securities, including in short sale transactions. If so, the underwriters or agents may use the securities received from us under these arrangements to close out any related open borrowings of securities.

## **Dealers**

We may sell the offered securities to dealers as principals. We may negotiate and pay dealers’ commissions, discounts or concessions for their services. The dealer may then resell such securities to the public either at varying prices to be determined by the dealer or at a fixed offering price agreed to with us at the time of resale. Dealers engaged by us may allow other dealers to participate in resales.

## **Direct Sales**

We may choose to sell the offered securities directly. In this case, no underwriters or agents would be involved.

## **Institutional Purchasers**

We may authorize agents, dealers or underwriters to solicit certain institutional investors to purchase offered securities on a delayed delivery basis pursuant to delayed delivery contracts providing for payment and delivery on a specified future date. The applicable prospectus supplement or pricing supplement, as the case may be will provide the details of any such arrangement, including the offering price and commissions payable on the solicitations.

We will enter into such delayed contracts only with institutional purchasers that we approve. These institutions may include commercial and savings banks, insurance companies, pension funds, investment companies and educational and charitable institutions.

## **Indemnification; Other Relationships**

We may have agreements with agents, underwriters, dealers and remarketing firms to indemnify them against certain civil liabilities, including liabilities under the Securities Act. Agents, underwriters, dealers and remarketing firms, and their affiliates, may engage in transactions with, or perform services for, us in the ordinary course of business. This includes commercial banking and investment banking transactions.

## **Market Making, Stabilization and Other Transactions**

There is currently no market for any of the offered securities other than the shares of common stock, which are listed on Nasdaq. If certain of the offered securities are traded after their initial issuance, they may trade at a discount from their initial offering price, depending upon prevailing interest rates, the market for similar securities and other factors. While it is possible that an underwriter could inform us that it intended to make a market in the offered securities, such underwriter would not be obligated to do so, and any such market making could be discontinued at any time without notice. Therefore, no assurance can be given as to whether an active trading market will develop for certain of the offered securities. We have no current plans for listing of the offered securities (other than the common stock) on any securities exchange; any such listing with respect to any particular securities will be described in the applicable prospectus supplement or pricing supplement, as the case may be.

In connection with any offering of common stock or preferred stock, the underwriters may purchase and sell common stock or preferred stock in the open market. These transactions may include short sales, syndicate covering transactions and stabilizing transactions. Short sales involve syndicate sales of common stock or preferred stock in excess of the number of shares to be purchased by the underwriters in the offering, which creates a syndicate short position. “Covered” short sales are sales of shares made in an amount up to the number of shares represented by the underwriters’ over-allotment option. In determining the source of shares to close out the covered syndicate short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option. Transactions to close out the covered syndicate short involve either purchases of the common stock or preferred stock in the open market after the distribution has been completed or the exercise of the over-allotment option. The underwriters may also make “naked” short sales of shares in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing common stock or preferred stock in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of bids for or purchases of shares in the open market while the offering is in progress for the purpose of pegging, fixing or maintaining the price of the securities.

In connection with any offering, the underwriters may also engage in penalty bids. Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

## **LEGAL MATTERS**

Certain legal matters, including the validity of the offered securities, will be passed upon for us by Westward Law Group, Las Vegas, Nevada or such other counsel identified in any applicable prospectus supplement.

## **EXPERTS**

The consolidated financial statements incorporated in this prospectus by reference from Xenetic Biosciences, Inc.'s and subsidiaries' Annual Report on Form 10-K, as amended, have been audited by Marcum LLP, an independent registered public accounting firm, as stated in their report, which are incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

## **WHERE YOU CAN FIND MORE INFORMATION**

We have filed a registration statement, of which this prospectus is a part, covering the securities offered hereby. As allowed by SEC rules, this prospectus does not contain all of the information set forth in the registration statement and the exhibits thereto. We refer you to the registration statement and the exhibits thereto for further information. This prospectus is qualified in its entirety by such other information.

Our SEC filings, including our registration statement, are also available to you on the SEC's website at [www.sec.gov](http://www.sec.gov). We file reports, proxy statements and other information with the SEC as required by the Exchange Act, which are available to view at our website on the Internet at [www.xeneticbio.com](http://www.xeneticbio.com). We are not incorporating by reference into this prospectus the information on our website, and you should not consider our website to be a part of this prospectus.



## INCORPORATION OF CERTAIN DOCUMENTS 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 from the date of filing those documents. Any reports filed by us with the SEC on or after the date of this prospectus will automatically update and, where applicable, supersede any information contained in this prospectus or incorporated by reference in this prospectus. We have filed the documents listed below with the SEC under the Exchange Act, and these documents are incorporated herein by reference (other than information in such documents that is furnished and not deemed to be filed):

- Our Annual Report on [Form 10-K](#) for the year ended December 31, 2023, filed with the SEC on March 21, 2024, as amended by that [Form 10-K/A](#), filed with the SEC on April 26, 2024;
- Our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2024, filed with the SEC on May 9, 2024;
- Our Quarterly Report on [Form 10-Q](#) for the quarter ended June 30, 2024, filed with the SEC on August 13, 2024;
- Our Current Reports on Form 8-K filed with the SEC on [May 22, 2024](#) and [June 21, 2024](#); and
- The description of our Common Stock included in our Registration Statement on [Form 8-A](#), filed on November 1, 2016.

All documents we subsequently file pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and prior to the termination of the offering of the securities to which this prospectus relates (other than information in such documents that is furnished and not deemed to be filed) shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing of those documents. All documents we file pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement that contains this prospectus and prior to the effectiveness of the registration statement shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing those documents.

We will provide to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, a copy of any or all of the information that has been incorporated by reference in this prospectus but not delivered with this prospectus (other than the exhibits to such documents which are not specifically incorporated by reference therein); we will provide this information at no cost to the requester upon written or oral request to: Corporate Secretary at Xenetic Biosciences, Inc., 945 Concord Street, Framingham, Massachusetts 01701, or (781) 778-7720.

Shares of Common Stock

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**PRELIMINARY PROSPECTUS SUPPLEMENT**

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*Sole Bookrunner*

**Canaccord Genuity**

, 2025

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