

As confidentially submitted to the Securities and Exchange Commission on March 17, 2025.
This draft registration statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains strictly confidential.

Registration Statement No. 333-

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

**FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

BONE BIOLOGICS CORPORATION

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

2834

(Primary Standard Industrial
Classification Code Number)

42-1743430

(I.R.S. Employer
Identification Number)

**2 Burlington Woods Drive, Suite 100
Burlington, MA 01803
(781) 552-4452**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Jeffrey Frelick
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Bone Biologics Corporation
2 Burlington Woods Drive, Suite 100
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(781) 552-4452**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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**Approximate date of commencement of proposed sale to the public:
As soon as practicable after the effective date of this registration statement.**

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box:

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

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

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

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

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

The information in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell nor does it seek an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to Completion, dated [___], 2025

PRELIMINARY PROSPECTUS



BONE BIOLOGICS CORPORATION

Up to [●] Shares of Common Stock

Up to [●] Prefunded Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Prefunded Warrants

Up to [●] Series D Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Series D Warrants

Up to [●] Series E Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Series E Warrants

Up to [●] Placement Agent Warrants to Purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock Underlying the Placement Agent Warrants

We are offering up to [●] shares of common stock, par value \$0.001 per share (“common stock”), together with Series D warrants to purchase up to [●] shares of common stock (the “Series D Warrants”) and Series E warrants to purchase up to [●] shares of common stock (the “Series E Warrants”), which we refer to collectively as the “warrants,” at an assumed combined public offering price of \$[●] per share and accompanying warrants (the last reported sale price of our common stock on the Nasdaq Capital Market, or Nasdaq, on [●], 2025). Each share of our common stock is being sold together with one Series D Warrant to purchase one share of common stock and one Series E Warrant to purchase one share of common stock. The Series D Warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the effective date of stockholder approval of the issuance of the shares upon exercise of the warrants (“Warrant Stockholder Approval”), provided however, if the Pricing Conditions (as defined below) are met, the Series D Warrants will be exercisable upon issuance (the “Initial Exercise Date”). The Series D Warrants will expire on the five-year anniversary of the Initial Exercise Date. The Series E Warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the Initial Exercise Date. The Series E Warrants will expire on the 18-month anniversary of the Initial Exercise Date. As used herein “Pricing Conditions” means that the combined offering price per share and accompanying warrants is such that the Warrant Stockholder Approval is not required under Nasdaq rules because either (i) the offering is an at-the-market offering under Nasdaq rules and such price equals or exceeds the sum of (a) the applicable “Minimum Price” per share under Nasdaq rule 5635(d) plus (b) \$0.125 per share of common stock underlying each of the warrants or (ii) the offering is a discounted offering where the pricing and discount (including attributing a value of \$0.125 per share underlying each of the warrants) meet the pricing requirements under the Nasdaq rules.

This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants.

We are also offering to those investors, if any, whose purchase of shares of our common stock in this offering would result in such investor, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the investor, 9.99%) of our outstanding common stock following the consummation of this offering, the opportunity to purchase, in lieu of the common stock that would otherwise result in the investor's beneficial ownership exceeding 4.99% (or, at the election of the investor, 9.99%), pre-funded warrants each to purchase one share of our common stock at an exercise price of \$0.001, which we refer to as the "pre-funded warrants." Each pre-funded warrant will be exercisable upon issuance and may be exercised at any time until all of the pre-funded warrants are exercised in full. Each pre-funded warrant is being sold together with one Series D Warrant to purchase one share of common stock and one Series E Warrant to purchase one share of common stock. The public offering price for each pre-funded warrant and the accompanying warrants is equal to the price per share of common stock and the accompanying warrants being sold to the public in this offering, minus \$0.001. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the pre-funded warrants.

For each pre-funded warrant we sell, the number of shares of common stock we sell in this offering will be decreased on a one-for-one basis. The shares of common stock and/or pre-funded warrants and the accompanying warrants can only be purchased together in this offering but will be issued separately and will be immediately separable upon issuance.

This offering will terminate on [●], 2025 unless we decide to terminate the offering (which we may do at any time in our discretion) prior to that date. We will have one closing for all the securities purchased in this offering. The combined public offering price per share (or pre-funded warrant) and accompanying warrants will be fixed for the duration of this offering.

We have engaged [●], the placement agent, to act as our exclusive placement agent in connection with this offering. The placement agent has agreed to use its reasonable best efforts to arrange for the sale of the securities offered by this prospectus. The placement agent is not purchasing or selling any of the securities we are offering and the placement agent is not required to arrange the purchase or sale of any specific number or dollar amount of securities. We have agreed to pay to the placement agent the placement agent fees set forth in the table below, which assumes that we sell all of the securities offered by this prospectus. Since we will deliver the securities to be issued in this offering upon our receipt of investor funds, there is no arrangement for funds to be received in escrow, trust or similar arrangement. There is no minimum offering requirement as a condition of closing of this offering. Because there is no minimum offering amount required as a condition to closing this offering, we may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us, and investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to pursue our business goals described in this prospectus. In addition, because there is no escrow account and no minimum offering amount, investors could be in a position where they have invested in our company, but we are unable to fulfill all of our contemplated objectives due to a lack of interest in this offering. Further, any proceeds from the sale of securities offered by us will be available for our immediate use, despite uncertainty about whether we would be able to use such funds to effectively implement our business plan. See “Risk Factors” beginning on page 10 of this prospectus for more information. We will bear all costs associated with the offering. See “Plan of Distribution” on page 21 of this prospectus for more information regarding these arrangements.

Our common stock is listed on Nasdaq under the symbol “BBLG.” There is no established trading market for the pre-funded warrants or the warrants and we do not expect an active market to develop. In addition, we do not intend to list the pre-funded warrants or the warrants on any national securities exchange or other trading market. Without an active trading market, the liquidity of these securities will be limited.

Certain information in this prospectus is based on an assumed public offering price of \$[●] per share and accompanying warrants (the last reported sale price of our common stock on Nasdaq on [●], 2025). The actual public offering price will be determined between us and the placement agent based on market conditions at the time of pricing, and may be at a discount to the current market price of our common stock. Therefore, the recent market price per share of common stock used throughout this prospectus as an assumed combined public offering price may not be indicative of the final offering price.

	Per Share and Accompanying Warrants	Per Pre- Funded Warrant and Accompanying Warrants	Total
Public offering price	\$	\$	\$
Placement Agent fees ⁽¹⁾	\$	\$	\$
Proceeds to us (before expenses) ⁽²⁾	\$	\$	\$

- (1) We have agreed to pay the placement agent a cash fee equal to [●]%. We have also agreed to pay the placement agent a management fee of [●]% of the aggregate gross proceeds raised in this offering and to reimburse the placement agent for certain of its offering related expenses, including reimbursement for non-accountable expenses in an amount up to \$[●], legal fees and expenses in the amount of up to \$[●], and for its clearing expenses in the amount of \$[●]. In addition, we have agreed to issue the placement agent or its designees warrants to purchase a number of shares of common stock equal to [●]% of the shares of common stock sold in this offering (including the shares of common stock issuable upon the exercise of the pre-funded warrants), at an assumed exercise price of \$[●] per share, which represents [●]% of the public offering price per share and accompanying warrants. For a description of compensation to be received by the placement agent, see “Plan of Distribution” for more information.
- (2) Because there is no minimum number of securities or amount of proceeds required as a condition to closing in this offering, the actual public offering amount, placement agent fees, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above. For more information, see “Plan of Distribution.”

You should read this prospectus, together with additional information described under the headings “Information Incorporated by Reference” and “Where You Can Find More Information,” carefully before you invest in any of our securities.

Investing in our securities involves a high degree of risk. See the section entitled “Risk Factors” beginning on page 10 of this prospectus and in the documents incorporated by reference into this prospectus for a discussion of risks that should be considered in connection with an investment in our securities.

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

Delivery of the securities offered hereby is expected to be made on or about

, 2025, subject to satisfaction of customary closing conditions.

The date of this prospectus is

, 2025.

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ABOUT THIS PROSPECTUS

We incorporate by reference important information into this prospectus. You may obtain the information incorporated by reference without charge by following the instructions under “Where You Can Find More Information.” You should carefully read this prospectus as well as additional information described under “Information Incorporated by Reference,” before deciding to invest in our securities.

We have not, and the placement agent has not, authorized anyone to provide you with additional information or information different from that contained in this prospectus or from that contained or incorporated by reference in this prospectus filed with the Securities and Exchange Commission (the “SEC”). We do not, and the placement agent and its affiliates do not, take any responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are offering to sell, and seeking offers to buy, our securities only in jurisdictions where offers and sales are permitted. The information contained in this prospectus, or any document incorporated by reference in this prospectus, is accurate only as of its date, regardless of the time of delivery of this prospectus or any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since that date.

This prospectus and the information incorporated by reference in this prospectus contain estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. We obtained the industry and market data in this prospectus from our own research as well as from industry and general publications, surveys and studies conducted by third parties. This data involves a number of assumptions and limitations and contains projections and estimates of the future performance of the industries in which we operate that are subject to a high degree of uncertainty, including those discussed in “Risk Factors.” We caution you not to give undue weight to such projections, assumptions and estimates. Further, industry and general publications, studies and surveys generally state that they have been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that these publications, studies and surveys are reliable, we have not independently verified the data contained in them. In addition, while we believe that the results and estimates from our internal research are reliable, such results and estimates have not been verified by any independent source.

Neither we nor the placement agent have done anything that would permit this offering or the possession or distribution of this prospectus in any jurisdiction where action for those purposes is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside of the United States.

CAUTIONARY NOTE CONCERNING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements that involve risks and uncertainties. You should not place undue reliance on these forward-looking statements. All statements other than statements of historical fact contained in this prospectus and the documents incorporated by reference herein are forward-looking statements and are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. In some cases, you can identify these forward-looking statements by terms such as “anticipate,” “believe,” “can,” “continue,” “could,” “depend,” “estimate,” “expect,” “intend,” “may,” “might,” “ongoing,” “plan,” “potential,” “predict,” “project,” “should,” “will,” “would” or the negative of those terms or other similar expressions, although not all forward-looking statements contain those words. We have based these forward-looking statements on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, strategy, short- and long-term business operations and objectives, and financial needs. These forward-looking statements include, but are not limited to, statements concerning the following:

- our ability to maintain compliance with the Nasdaq listing standards and remain listed on Nasdaq;
- our projected financial position and estimated cash burn rate;
- our estimates regarding expenses, future revenues and capital requirements;
- our ability to continue as a going concern;
- our need to raise substantial additional capital to fund our operations;
- the success, cost and timing of our clinical trials;
- our dependence on third parties in the conduct of our clinical trials;
- our ability to obtain the necessary regulatory approvals to market and commercialize our product candidates;
- the ultimate impact of health pandemics or epidemics on our business, our clinical trials, our research programs, healthcare systems or the global economy as a whole;
- the potential that results of preclinical and clinical trials indicate our current product candidate or any future product candidates we may seek to develop are unsafe or ineffective;
- the results of market research conducted by us or others;
- our ability to obtain and maintain intellectual property protection for our current product candidates;
- our ability to protect our intellectual property rights and the potential for us to incur substantial costs from lawsuits to enforce or protect our intellectual property rights;
- the possibility that a third party may claim we or our third-party licensors have infringed, misappropriated or otherwise violated their intellectual property rights and that we may incur substantial costs and be required to devote substantial time defending against claims against us;
- our reliance on third-party suppliers and manufacturers;
- the success of competing therapies and products that are or become available;
- our ability to expand our organization to accommodate potential growth and our ability to retain and attract key personnel;
- the potential for us to incur substantial costs resulting from product liability lawsuits against us and the potential for these product liability lawsuits to cause us to limit our commercialization of our product candidate;
- market acceptance of our product candidate, the size and growth of the potential markets for our current product candidate and any future product candidates we may seek to develop, and our ability to serve those markets;
- the successful development of our commercialization capabilities, including sales and marketing capabilities;
- our expectation regarding the number of shares outstanding after this offering;
- our intention to use the net proceeds of this offering to fund clinical trials, maintain and extend our patent portfolio, and for working capital and other general corporate purposes; and
- pending the intended uses described herein, our intention to invest the net proceeds of this offering in short-term, investment grade, interest-bearing securities.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including the successful development and commercialization of our product candidates, market acceptance of our product candidates, our financial performance, including our ability to fund operations, our ability to maintain compliance with Nasdaq’s continued listing requirements, regulatory approval and regulation of our product candidates, our expected use of proceeds from this offering, and other factors and risks identified from time to time in our filings with the SEC, including this prospectus and those described in “Risk Factors.” Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Moreover, except as required by law, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this prospectus to conform these statements to actual results or to changes in our expectations.

You should read this prospectus and the documents that we reference and that are incorporated by reference in this prospectus and have filed with the SEC as exhibits to the registration statement of which this prospectus is a part with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

PROSPECTUS SUMMARY

The following summary highlights selected information contained or incorporated by reference in this prospectus and does not contain all of the information that may be important to you and your investment decision. Before investing in our securities, you should carefully read this entire prospectus, including our consolidated financial statements and the related notes and other documents incorporated by reference herein, as well as the information under the caption "Risk Factors" herein and under similar headings in the other documents that are incorporated by reference into this prospectus including documents that are filed after the date hereof. Some of the statements in this prospectus constitute forward-looking statements that involve risks and uncertainties. See "Cautionary Note Concerning Forward-Looking Statements." In this prospectus, unless context requires otherwise, references to "we," "us," "our," "BBLG" "Bone Biologics," or the "Company" refer to Bone Biologics Corporation and its subsidiary on a consolidated basis.

Company Overview

We are a medical device company that is currently focused on bone regeneration in spinal fusion using the recombinant human protein known as NELL-1. NELL-1 in combination with DBM, demineralized bone matrix, is an osteopromotive recombinant protein that provides target specific control over bone regeneration. The NELL-1 technology platform has been licensed exclusively for worldwide applications to us through a technology transfer from the UCLA Technology Development Group on behalf of UC Regents ("UCLA TDG"). UCLA TDG and the Company received guidance from the U.S. Food and Drug Administration ("FDA") that NELL-1/DBM will be classified as a device/drug combination product that will require an FDA-approved pre-market approval ("PMA") application before it can be commercialized in the United States.

We were founded by University of California professors in collaboration with an Osaka University professor and a University of Southern California surgeon in 2004 as a privately held company with proprietary, patented platform technology. Our platform technology has been validated in sheep and non-human primate models to facilitate bone growth. We believe our platform technology has application in delivering improved outcomes in the surgical specialties of spinal, orthopedic, general orthopedic, plastic reconstruction, neurosurgery, interventional radiology, and sports medicine. Lead product development and clinical studies are targeted on spinal fusion surgery, one of the larger segments in the orthopedic market.

We are a clinical-stage entity. The production and marketing of our products and ongoing research and development activities are subject to extensive regulation by numerous governmental authorities in the United States. Prior to marketing in the United States, any combination product developed by us must undergo rigorous preclinical (animal) and clinical (human) testing and an extensive regulatory approval process implemented by the FDA under the Federal Food, Drug, and Cosmetic Act. There can be no assurance that we will not encounter problems in clinical trials that will cause us or the FDA to delay or suspend clinical trials.

Our success will depend in part on our ability to obtain and retain patents and product license rights, maintain trade secrets, and operate without infringing on the proprietary rights of others, both in the United States and other countries. There can be no assurance that patents issued to or licensed by us will not be challenged, invalidated, rendered unenforceable, or circumvented, or that the rights granted thereunder will provide proprietary protection or competitive advantages to us.

During 2024, we announced the treatment of the first two patients in the multicenter, prospective, randomized pilot clinical study of our NB1 bone graft device. NB1 is NELL-1 protein combined with demineralized bone matrix (DBM) to provide rapid, specific and guided control over bone regeneration.

The pilot clinical study will evaluate the safety and effectiveness, fusion success, pain, function improvement and adverse events of NB1 in up to 30 adult subjects who undergo transforaminal lumbar interbody fusion (TLIF) to treat degenerative disc disease (DDD). To be enrolled in the study, subjects must have DDD at one level from L2-S1 and may also have up to Grade 1 spondylolisthesis or Grade 1 retrolisthesis at the involved level. The study is being conducted in Australia. The study design was previously reviewed and agreed upon by the FDA's Division of Orthopedic Devices in a Pre-submission to support progression to a pivotal clinical trial in the United States.

Product Candidates

We have developed a stand-alone platform technology through significant laboratory and small and large animal research over more than 10 years to generate the current applications across broad fields of use. The platform technology is our recombinant human protein, known as NELL-1, a proprietary skeletal-specific growth factor that is a bone void filler. NELL-1 provides regulation over skeletal tissue formation and stem cell differentiation during bone regeneration. We obtained the platform technology pursuant to an exclusive license agreement with UCLA TDG which grants us exclusive rights to develop and commercialize NELL-1 for spinal fusion by local administration, osteoporosis and trauma applications. A major challenge associated with orthopedic surgery is effective bone regeneration, including challenges related to rapid, uncontrolled bone growth that can cause unsound structure; less dense bone formation; unwanted bone formation, and cysts, swelling; and intense inflammatory response to current bone regeneration compounds. We believe NELL-1 will address these unmet clinical challenges for effective bone regeneration, especially in hard healers.

We are currently focused on bone regeneration in lumbar spinal fusion using NELL-1 in combination with DBM, a demineralized bone matrix from MTF Biologics (“MTF”). The combination NELL-1/DBM medical device is an osteopromotive recombinant protein that provides target specific control over bone regeneration. We have successfully surpassed four critical milestones:

- Demonstrated a successful small laboratory scale pilot run for the manufacturing of the recombinant NELL-1 protein in Chinese hamster ovary cells;
- Validated protein dosing and efficacy in established large animal (sheep) model pilot studies;
- Completed pivotal animal study; and
- Initiated a first-in-man pilot clinical study in Australia.

Our lead product candidate is expected to be purified NELL-1 mixed with 510(k)-cleared DBM Demineralized Bone Putty recommended for use in conjunction with applicable hardware consistent with the indication. The NELL-1/DBM Fusion Device, NB1, will be comprised of a single dose vial of NELL-1 recombinant protein freeze dried onto DBM. A vial of NELL-1/DBM will be sold in a convenience kit with a diluent and a syringe of 510(k)-cleared demineralized bone (“DBM Putty”) produced by MTF. A delivery device will allow the surgeon to mix the reconstituted NELL-1 with the appropriate quantity of DBM Putty just prior to implantation. Use of NB1 will not require changes to the orthobiologic preparation or implantation protocol.

The NELL-1/DBM Fusion Device, NB1, is intended for use in lumbar spinal fusion and may have a variety of other spine and orthopedic applications. While the product is initially targeted at the lumbar spine fusion market, in keeping with our exclusive license agreement, we believe NELL-1’s novel set of characteristics, target-specific mechanism of action, efficacy, safety and affordability position the product for application in a variety of procedures including:

Spine Implants. The global bone graft substitute market presents a \$3 billion opportunity per Fortune Business Insights. While use of the patient’s own bone, also referred to as autograft, to enhance fusion of vertebral segments is currently the optimal procedure for this type of treatment, complications associated with autograft bone including pain, increased surgical time and infection limit its use.

Non-Union Trauma Cases. While the majority of fractures heal without the need for osteosynthetic products, bone substitutes are used in complicated breaks where the bone does not mend naturally. Management believes that NELL-1 technology will perform as well as other growth factors, addressing this \$8 billion global market opportunity per Fortune Business Insights.

Osteoporosis. The global osteoporosis market presents an \$11.2 billion market opportunity per Evercore analyst reports. Finding a solution to counter a decrease in bone mass and density seen in women most frequently after menopause or a similar effect on astronauts in microgravity environments for an extended period is a major medical challenge. The systemic use of NELL-1 to stimulate bone regeneration throughout the body thereby increasing bone density could have a very significant impact on the treatment of osteoporosis.

UCLA's initial research was funded with approximately \$18 million in resources from UCLA TDG and government grants. Since licensing the exclusive worldwide intellectual property rights from UCLA TDG, we have continued development with funding through capital raises. Our research and development expenses for the years ended December 31, 2024 and 2023 were \$2,130,385 and \$6,907,824, respectively.

NELL-1's powerful specific bone forming properties are derived from the ability of NELL-1 to only target cells that exhibit an activated "master switch" to develop into bone. NELL-1 is a function-specific recombinant human protein that has been proven in laboratory bench models to recapitulate normal human growth and development to provide control over bone regeneration.

We have completed two preclinical sheep studies that demonstrated our recombinant NELL-1 ("rhNELL-1") growth factor effectively promotes bone formation in a phylogenetically advanced spine model. In addition, rhNELL-1 was shown to be well tolerated and there were no findings of inflammation. Our pivotal sheep study evaluated the effect of rhNELL-1 combined with DBM on lumbar interbody arthrodesis in an adult ovine model and demonstrated a 37.5% increased frequency of fusion at 26 weeks compared with the control.

We began subject enrollment in 2024 in our first-in-man pilot clinical study to evaluate the safety and effectiveness of NB1 in adult subjects with spinal degenerative disc disease at one level from L2-S1, who may also have up to Grade 1 spondylolisthesis or Grade 1 retrolisthesis at the involved level, and are undergoing transforaminal lumbar interbody fusion. The multi-center, prospective, randomized study is being conducted in Australia and will enroll up to 30 patients. The primary end-point is fusion success at 12 months and change from baseline in the Oswestry Disability Index pain score. We anticipate completing the trial 12 months after enrolling the 30th patient. We intend to use the pilot clinical trial data from the Australia study to enable a future, larger U.S. pivotal clinical study, prior to submission of a PMA to the FDA.

Our Business Strategy

Our business plan is to develop our target-specific growth factor for bone regeneration, based on preclinical and clinical data demonstrating increases in the quantity and quality of bone, and a strong safety profile. Our initial focus on lumbar spinal fusion entails advancing our target-specific growth factor through clinical studies to achieve FDA approval with comparable efficacy and safety to the gold standard for spine fusion (autografts). Continued capital funding is critical to facilitate the development of our Nell-1 technology through the clinical regulatory path.

Intellectual Property Risks

Our patent portfolio currently consists of six patents which expire between 2026 and 2033. We intend to expand our portfolio through composition of matter, methods of use and methods of production patent applications, as the opportunity arises through the development of our platform technology. Our success will depend in part on our ability to obtain patents and product license rights, maintain trade secrets, and operate without infringing on the proprietary rights of others, both in the United States and other countries. There can be no assurance that patents issued to or licensed by us will not be challenged, invalidated, rendered unenforceable, or circumvented, or that the rights granted thereunder will provide proprietary protection or competitive advantages to us. The patent positions of medical device companies are uncertain and involve complex legal and factual questions. We may incur significant expenses in protecting our intellectual property and defending or assessing claims with respect to intellectual property owned by others. See "Risk Factors" on page 10 and other information included or incorporated by reference in this prospectus for a discussion of intellectual property risks to consider carefully before deciding to invest in our securities.

Our Management Team

We have two full-time employees. Jeffrey Frelick has served as our President and Chief Executive Officer since June 2019 and brings more than 35 years of leadership, operational, and investment experience in the life science industry. Deina Walsh has served as our Chief Financial Officer since November 2014.

Mr. Frelick previously served as our Chief Operating Officer from 2015 to June 2019. Prior to Bone Biologics, Mr. Frelick spent 15 years on Wall Street as a sell-side analyst following the med-tech industry at investment banks Canaccord Genuity, ThinkEquity and Lazard. He also previously worked at Boston Biomedical Consultants where he provided strategic planning assistance, market research data and due diligence for diagnostic companies. He began his career at Becton Dickinson in sales and sales management positions after gaining technical experience as a laboratory technologist with Clinical Pathology Facility. Mr. Frelick received a B.S. in Biology from University of Pittsburgh and an M.B.A. from Suffolk University's Sawyer Business School.

Ms. Walsh has served as our Chief Financial Officer since November 2014. She is a certified public accountant and was the owner/founder of DHW CPA, PLLC, a public accounting firm. Prior to forming her firm, Ms. Walsh spent 13 years at a public accounting firm where, as a partner, she was actively responsible for leading firm audit engagements of publicly held entities in accordance with PCAOB standards and compliance with SEC regulations, including internal control requirements under Section 404 of the Sarbanes-Oxley Act. Ms. Walsh had a global client base including entities throughout the United States, Canada and China. These entities encompass a diverse range of industries including manufacturing, wholesale, life sciences, pharmaceuticals, and technology. Her experience includes work with start-up companies and well-established operating entities. She has assisted many entities seeking debt and equity capital. Areas of specialty include mergers, acquisitions, reverse mergers, consolidations, complex equity structures, foreign currency translations and revenue recognition complexities. Ms. Walsh has an Associates of Science Degree in Business Administration from Monroe Community College and a Bachelor of Science Degree in Accounting from the State University of New York at Brockport.

We have relied and plan on continuing to rely on independent organizations, advisors and consultants to perform certain services for us, including handling substantially all aspects of regulatory approval, clinical management, manufacturing, marketing, and sales. Such services may not always be available to us on a timely basis or at costs that we can afford. We also have engaged and plan to continue to engage regulatory consultants to advise us on our dealings with the FDA and other foreign regulatory authorities and have been and will be required to retain additional consultants and employees.

Our future performance will depend in part on our ability to successfully integrate newly hired officers into our management team, engage and retain consultants, and to develop an effective working relationship with our management and consultants. Losing key personnel or failing to recruit necessary additional personnel would impede our ability to attain our development objectives. Losing key personnel or failing to recruit necessary additional personnel would impede our ability to attain our development objectives. See "Risk Factors" on page 10 and other information included or incorporated by reference in this prospectus for a discussion of management risks to consider carefully before deciding to invest in our securities.

Going Concern

We have a history of operating losses since inception and expect to incur additional near-term losses. As discussed further in “Management’s Discussion and Analysis - Liquidity and Capital Resources,” included in our Form 10-K for the year ended December 31, 2024, which is incorporated herein by reference, our independent registered public accounting firm, in its audit report to the financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2024, expressed substantial doubt about our ability to continue as a going concern. Our consolidated financial statements do not include any adjustments that may result from the outcome of this uncertainty. Following this offering, we will need to raise additional capital to fund our operations and continue to support our planned development and commercialization activities. If we cannot secure the financing needed to continue as a viable business, our stockholders may lose some or all of their investment in us.

Corporate Information

We were incorporated under the laws of the State of Delaware on October 18, 2007 as AFH Acquisition X, Inc. Pursuant to a Merger Agreement, dated September 19, 2014, by and among the Company, its wholly-owned subsidiary, Bone Biologics Acquisition Corp., a Delaware corporation (“Merger Sub”), and Bone Biologics, Inc., Merger Sub merged with and into Bone Biologics Inc., with Bone Biologics Inc. remaining as the surviving corporation in the merger. Upon the consummation of the merger, the separate existence of Merger Sub ceased. On September 22, 2014, the Company officially changed its name to “Bone Biologics Corporation” to more accurately reflect the nature of its business and Bone Biologics, Inc. became a wholly owned subsidiary of the Company. Bone Biologics, Inc. was incorporated in California on September 9, 2004.

Our principal executive offices are located at 2 Burlington Woods Drive, Suite 100, Burlington MA 01803 and our telephone number is (781) 552-4452. Our website address is www.bonebiologics.com. The information contained on our website is not incorporated by reference into this prospectus, and you should not consider any information contained on, or that can be accessed through, our website as part of this prospectus or in deciding whether to invest in our securities.

THE OFFERING

The following summary contains basic information about this offering. The summary is not intended to be complete. You should read the full text and more specific details contained elsewhere in this prospectus.

<i>Common Stock Offered</i>	Up to [●] shares.
<i>Pre-Funded Warrants Offered</i>	We are also offering to those investors, if any, whose purchase of shares of our common stock in this offering would result in such investor, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the investor, 9.99%) of our outstanding common stock following the consummation of this offering, the opportunity to purchase, in lieu of the common stock that would otherwise result in the investor's beneficial ownership exceeding 4.99% (or, at the election of the investor, 9.99%), pre-funded warrants each to purchase one share of our common stock at an exercise price of \$0.001, which we refer to as the "pre-funded warrants." Each pre-funded warrant will be exercisable upon issuance and may be exercised at any time until all of the pre-funded warrants are exercised in full. Each pre-funded warrant is being sold together with one Series D Warrant to purchase one share of common stock and one Series E Warrant to purchase one share of common stock. The public offering price for each pre-funded warrant and the accompanying warrants is equal to the price per share of common stock and the accompanying warrants being sold to the public in this offering, minus \$0.001. For each pre-funded warrant we sell, the number of shares of common stock we sell will be decreased on a one-for-one basis. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the pre-funded warrants. See "Description of Securities – Pre-Funded Warrants" for additional information.
<i>Warrants Offered</i>	Each share of common stock or pre-funded warrant is being offered together with one Series D Warrant to purchase one share of common stock and one Series E Warrant to purchase one share of common stock. The Series D Warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the effective date of the Warrant Stockholder Approval, provided however, if the Pricing Conditions are met, the Series D Warrants will be exercisable upon issuance (the "Initial Exercise Date"). The Series D Warrants will expire on the five-year anniversary of the Initial Exercise Date. The Series E Warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the Initial Exercise Date. The Series E Warrants will expire on the 18-month anniversary of the Initial Exercise Date. Each holder of warrants will be prohibited from exercising its warrant for shares of our common stock if, as a result of such exercise, the holder, together with its affiliates, would own more than 4.99% of the total number of shares of our common stock then issued and outstanding. However, any holder may increase such percentage to any other percentage not in excess of 9.99%. This offering also relates to the offering of the shares of common stock issuable upon the exercise of the warrants. For more information regarding the warrants, you should carefully read the section titled "Description of Securities — Warrants" in this prospectus.
<i>Placement Agent Warrants</i>	We have agreed to issue to the placement agent or its designees warrants, or the placement agent warrants, to purchase up to [●]% of the shares of common stock sold in this offering (including the shares of common stock issuable upon the exercise of the pre-funded warrants), at an assumed exercise price of \$[●] per share, which represents [●]% of the public offering price per share and accompanying warrants. For a description of the compensation to be received by the placement agent, see "Plan of Distribution" for more information.
<i>Common Stock Outstanding Prior to This Offering</i>	3,271,042 shares.

Common Stock to be Outstanding After this Offering [●] shares (assuming we sell only shares of common stock and no pre-funded warrants and no exercise of the warrants offered hereby).

Use of Proceeds

We estimate that the net proceeds of this offering assuming no exercise of the warrants, after deducting placement agent fees and estimated offering expenses, will be approximately \$[●] million, assuming we sell only shares of common stock and no pre-funded warrants and assuming no exercise of the warrants. We intend to use all of the net proceeds we receive from this offering to fund clinical trials, maintain and extend our patent portfolio, and for working capital and other general corporate purposes. See “Use of Proceeds.”

Lock-up Agreements

Our executive officers and directors have agreed with the placement agent not to sell, transfer or dispose of any shares or similar securities for a period of [●] days after the date of this prospectus. For additional information regarding our arrangement with the placement agent, please see “Plan of Distribution.”

Nasdaq Trading Symbol

Our common stock is listed on the Nasdaq Capital Market under the symbol “BBLG.” We do not intend to list the pre-funded warrants or warrants offered hereunder on any stock exchange. Without an active trading market, the liquidity of the pre-funded warrants and warrants will be limited.

Risk Factors

See “Risk Factors” on page 10 and other information included or incorporated by reference in this prospectus for a discussion of factors to consider carefully before deciding to invest in our securities.

The discussion above is based on 3,271,042 shares of our common stock outstanding as of [●], 2025, and excludes as of such date the following:

- 275,649 shares of common stock issuable upon exercise of stock options outstanding at a weighted average exercise price of \$30.02 per share.
- 1,854,096 shares of common stock issuable upon exercise of outstanding common stock warrants with a weighted average exercise price of \$15.49 per share.
- 353,840 shares of common stock reserved for future grants pursuant to the Bone Biologics Corporation 2015 Equity Incentive Plan (the “2015 Equity Incentive Plan”).
- [●] shares of our common stock issuable upon the exercise of warrants to be issued in this offering; and
- [●] shares of common stock issuable upon the exercise of the placement agent warrants to be issued to the placement agent or its designees as compensation in connection with this offering and pursuant to this prospectus.

Unless expressly indicated or the context requires otherwise, all information in this prospectus assumes (i) we issue no pre-funded warrants and (ii) no exercise of the warrants offered hereby.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider all of the information contained in this prospectus and other information which may be incorporated by reference in this prospectus as provided under “Information Incorporated by Reference.” In particular, you should carefully consider the risks described below and elsewhere in this prospectus, which could materially and adversely affect our business, results of operations or financial condition, together with those under the heading “Risk Factors” in our most recent Annual Report on Form 10-K, which is incorporated by reference into this prospectus, as those risk factors are amended or supplemented by our subsequent filings with the SEC. These risks and uncertainties are not the only risks and uncertainties we face. Additional risks and uncertainties not currently known to us, or that we currently view as immaterial, may also impair our business. If any of the risks or uncertainties described below or in our SEC filings or any additional risks and uncertainties actually occur, our business, financial condition, results of operations and cash flow could be materially and adversely affected. As a result, you could lose all or part of your investment.

Risks Related to This Offering and Ownership of our Securities

Our recurring operating losses have raised substantial doubt regarding our ability to continue as a going concern.

Our recurring operating losses raise substantial doubt about our ability to continue as a going concern. During the year ended December 31, 2024, we incurred a net loss of \$4.1 million and used net cash in operating activities of \$4.1 million. Our available cash is expected to fund our operations up to the fourth quarter of 2025. In addition, our independent registered public accounting firm, in its audit report to the financial statements as of and for the year ended December 31, 2024, expressed substantial doubt about our ability to continue as a going concern. Our financial statements do not include any adjustments that might result if we are unable to continue as a going concern and, therefore, be required to realize our assets and discharge our liabilities other than in the normal course of business which could cause investors to suffer the loss of all or a substantial portion of their investment. In order to have sufficient cash and cash equivalents to fund our operations in the future, we will need to raise additional equity or debt capital and cannot provide any assurance that we will be successful in doing so. The perception of our ability to continue as a going concern may make it more difficult for us to obtain financing for the continuation of our operations and could result in the loss of confidence by investors, suppliers and employees.

The price of our common stock and public warrants may fluctuate substantially.

You should consider an investment in our common stock to be risky. Some factors that may cause the market price of our common stock to fluctuate, in addition to the other risks mentioned in this “Risk Factors” section are:

- our ability to meet the Nasdaq listing requirements;
- volatility and limitations in trading volumes of our shares of common stock;
- our ability to obtain financing to conduct and complete research and development activities including, but not limited to, our clinical trials, and other business activities;
- the timing and success of our clinical trials and introduction of products to the market;
- changes in the development status of our product candidate;
- any delays or adverse developments or perceived adverse developments with respect to the FDA’s review of our planned preclinical and clinical trials;
- safety concerns related to the use of our product candidate;
- changes in our capital structure or dividend policy, future issuances of securities, sales of large blocks of common stock by our stockholders;
- our cash position;
- announcements and events surrounding financing efforts, including debt and equity securities;
- changes in general economic, political and market conditions in or any of the regions in which we conduct our business;
- analyst research reports, recommendation and changes in recommendations, price targets, and withdrawals of coverage;
- departures and additions of key personnel;
- disputes and litigation;
- changes in applicable laws, rules, regulations, or accounting practices and other dynamics; and
- other events or factors, many of which may be out of our control.

In addition, if the market for stock in our industry or industries related to our industry, or the stock market in general, experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition and results of operations. If any of the foregoing occurs, it could cause our stock price to fall and may expose us to lawsuits that, even if unsuccessful, could be costly to defend and a distraction to management.

Future sales and issuances of our common stock or equity-linked securities could result in additional dilution of the percentage ownership of our stockholders and could cause our share price to fall.

Following this offering we expect that significant additional capital will be needed in the future to continue our planned operations, including increased marketing, hiring new personnel, commercializing our product, and continuing activities as an operating public company. To the extent we raise additional capital by issuing common stock, or securities convertible into or exchangeable or exercisable for shares of common stock, our stockholders, including investors who purchase shares of common stock or pre-funded warrants in this offering, may experience substantial dilution. We may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering. If we sell common stock, convertible securities or other equity securities in more than one transaction, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our stockholders, and new investors could gain rights superior to our existing stockholders, including investors who purchase shares of common stock or pre-funded warrants in this offering. Moreover, the perceived risk of this potential dilution could cause stockholders to attempt to sell their shares and investors to short our common stock. These sales also may result in downward pressure on the price of our common stock and make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem reasonable or appropriate, and may cause you to lose the value of your investment.

The warrants are speculative in nature.

The warrants do not confer any rights of common stock ownership on their holders, such as voting rights or the right to receive dividends, but rather merely represent the right to acquire shares of common stock at a fixed price for a limited time. Moreover, following this offering the market value of the warrants, if any, will be uncertain and there can be no assurance that the market value of the warrants will equal or exceed their imputed offering price. The warrants will not be listed or quoted for trading on any market or exchange. There can be no assurance that the market price of our common stock will ever equal or exceed the exercise price of the warrants, and consequently, the warrants may expire valueless.

There is no public market for the pre-funded warrants or warrants offered by us.

There is no established public trading market for the pre-funded warrants or warrants and we do not expect such a market to develop. In addition, we do not intend to apply to list the pre-funded warrants or warrants on any national securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the pre-funded warrants and warrants will be limited.

Holders of the warrants and pre-funded warrants will have no rights as common stockholders until they acquire our common stock.

Until holders of the warrants or pre-funded warrants acquire shares of our common stock upon exercise of the warrants or pre-funded warrants, the holders will have no rights with respect to shares of our common stock issuable upon exercise of the warrants or pre-funded warrants. Upon exercise of the warrants or pre-funded warrants, the holder will be entitled to exercise the rights of a common stockholder as to the security exercised only as to matters for which the record date occurs after the exercise.

Our management will have broad discretion over the use of the proceeds we receive in this offering and might not apply the proceeds in ways that increase the value of your investment.

Our management will have broad discretion in the application of the net proceeds from this public offering, including for any of the currently intended purposes described in the section entitled "Use of Proceeds." Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management may not apply our cash from this offering in ways that ultimately increase the value of any investment in our securities or enhance stockholder value. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply our cash in ways that enhance stockholder value, we may fail to achieve expected financial results, which may result in a decline in the price of our shares of common stock, and, therefore, may negatively impact our ability to raise capital, invest in or expand our business, acquire additional products or licenses, commercialize our product, or continue our operations.

Purchasers who purchase our securities in this offering pursuant to a securities purchase agreement may have rights not available to purchasers that purchase without the benefit of a securities purchase agreement.

In addition to rights and remedies available to all purchasers in this offering under federal securities and state law, the purchasers that enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. The ability to pursue a claim for breach of contract provides those investors with the means to enforce the covenants uniquely available to them under the securities purchase agreement including: (i) timely delivery of shares; (ii) agreement to not enter into variable rate financings for [●] from closing, subject to certain exceptions; (iii) agreement to not enter into any financings for [●] days from closing; and (iv) indemnification for breach of contract.

This is a best efforts offering, with no minimum amount of securities is required to be sold, and we may not raise the amount of capital we believe is required for our business plans, including our near-term business plans.

The placement agent has agreed to use its reasonable best efforts to solicit offers to purchase the securities in this offering. The placement agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of the securities. There is no required minimum number of securities that must be sold as a condition to completion of this offering. Because there is no minimum offering amount required as a condition to the closing of this offering, the actual offering amount, placement agent fees and proceeds to us are not presently determinable and may be substantially less than the maximum amounts set forth above. We may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us, and investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to support our continued operations, including our near-term continued operations. Thus, we may not raise the amount of capital we believe is required for our operations in the short-term and may need to raise additional funds, which may not be available or available on terms acceptable to us.

Because there is no minimum required for the offering to close, investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to pursue the business goals outlined in this prospectus.

We have not specified a minimum offering amount nor have or will we establish an escrow account in connection with this offering. Because there is no escrow account and no minimum offering amount, investors could be in a position where they have invested in our company, but we are unable to fulfill our objectives due to a lack of interest in this offering. Further, because there is no escrow account in operation and no minimum investment amount, any proceeds from the sale of securities offered by us will be available for our

immediate use, despite uncertainty about whether we would be able to use such funds to effectively implement our business plan. Investor funds will not be returned under any circumstances whether during or after the offering.

There can be no assurance that we will be able to comply with the continued listing standards of Nasdaq, a failure of which could result in a delisting of our common stock and certain warrants.

Nasdaq requires that the trading price of listed stock remain above \$1.00 in order for the stock to remain listed. If a listed stock trades below \$1.00 for more than 30 consecutive trading days, then it is subject to delisting from the Nasdaq. In addition, to maintain a listing on Nasdaq, we must satisfy minimum financial and other continued listing standards, including those regarding minimum stockholders' equity, minimum publicly available shares, director independence and independent committee requirements and other corporate governance requirements. While we are currently in compliance with Nasdaq's listing standards, our common stock has been trading below \$1.00 since February 24, 2025, and Nasdaq will continue to monitor our compliance with its requirements. If we are unable to satisfy these standards, we could be subject to delisting, which would have a negative effect on the price of our common stock, impair your ability to sell or purchase our common stock or warrants when you wish to do so, and potentially cause you to lose the value of your investment in us. In the event of a delisting, we would expect to take actions to restore our compliance with the listing standards, but we can provide no assurance that any action we take to restore our compliance would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the minimum bid price requirement, or prevent future noncompliance with the listing requirements.

If the Company is delisted from Nasdaq, its common stock may be eligible for trading on an over-the-counter market. If the Company is not able to obtain a listing on another stock exchange or quotation service for its common stock, it may be extremely difficult or impossible for stockholders to sell their shares of common stock. Moreover, if the Company is delisted from Nasdaq, but obtains a substitute listing for its common stock, it will likely be on a market with less liquidity, and therefore experience potentially more price volatility than experienced on Nasdaq. Stockholders may not be able to sell their shares of common stock on any such substitute market in the quantities, at the times, or at the prices that could potentially be available on a more liquid trading market. As a result of these factors, if the Company's common stock is delisted from Nasdaq, the value and liquidity of the Company's common stock would likely be significantly adversely affected. A delisting of the Company's common stock from Nasdaq could also adversely affect the Company's ability to obtain financing for its operations and/or result in a loss of confidence by investors, employees and/or business partners.

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

We currently anticipate that we will retain future earnings, if any, 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 stockholders will therefore be limited to the increase, if any, of our share price.

The right of our President and Chief Executive Officer and Chief Financial Officer to participate in future financings of ours could impair our ability to raise capital.

Jeffrey Frelick, our President and Chief Executive Officer, and Deina Walsh, our Chief Financial Officer, hold contractual preemptive rights which allow them to participate, at their option, in all future financings up to an amount necessary to maintain their percentage interest in our common stock. The existence of such preemptive rights, or the exercise of such rights, may deter potential investors from providing us needed financing, or may deter investment banks from working with us. This may have a material adverse effect on our ability to raise capital which, in turn, could have a material adverse effect on our business prospects.

If our shares of common stock become subject to the penny stock rules, it would become more difficult to trade our shares.

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a price of less than \$5.00, other than securities registered on certain national securities exchanges or authorized for quotation on certain automated quotation systems, provided that current price and volume information with respect to transactions in such securities is provided by the exchange or system. If we do not retain a listing on Nasdaq and if the price of our common stock is less than \$5.00, our common stock will be deemed a penny stock. The penny stock rules require a broker-dealer, before a transaction in a penny stock not otherwise exempt from those rules, to deliver a standardized risk disclosure document containing specified information. In addition, the penny stock rules require that before effecting any transaction in a penny stock not otherwise exempt from those rules, a broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive (i) the purchaser's written acknowledgment of the receipt of a risk disclosure statement; (ii) a written agreement to transactions involving penny stocks; and (iii) a signed and dated copy of a written suitability statement. These disclosure requirements may have the effect of reducing the trading activity in the secondary market for our common stock, and therefore stockholders may have difficulty selling their shares.

Risks Relating to Our Financial Position and Capital Needs

Our limited operating history makes it difficult to evaluate our current business and future prospects.

We have a limited operating history, and there is a risk that we will be unable to continue as a going concern. We have minimal assets and no significant financial resources. Our limited operating history makes it difficult to evaluate our current business model and future prospects. Accordingly, you should consider our prospects in light of the costs, uncertainties, delays and difficulties frequently encountered by companies in the early stages of development. Potential investors should carefully consider the risks and uncertainties that a company with a limited operating history will face. In particular, potential investors should consider that there is a significant risk that we will not be able to, among other things:

- implement or execute our current business plan, which may or may not be sound;
- maintain our anticipated management and advisory team;
- raise sufficient funds in the capital markets to effectuate our business plan; and
- utilize the funds that we do have and/or raise in the future to efficiently execute our business strategy.

If we cannot execute any one of the foregoing or similar matters relating to our business, the business may fail, in which case you would lose the entire amount of your investment in us.

Our long-term capital requirements are subject to numerous risks.

We anticipate that we will need to raise substantial additional funds to achieve FDA approval, if possible, for a spine interbody fusion indication, including costs related to a pivotal clinical trial prior to marketing our first product. Our long-term capital requirements will depend on many factors, including, among others:

- the number of potential formulations, products and technologies in development;
- continued progress and cost of our research and development programs;
- progress with pre-clinical studies and clinical trials;
- time and costs involved in obtaining regulatory (including FDA) clearance;
- costs involved in preparing, filing, prosecuting, maintaining and enforcing patent claims;
- costs of developing sales, marketing and distribution channels and our ability to sell our formulations or products;
- costs involved in establishing manufacturing capabilities for commercial quantities of our products;
- competing technological and market developments;
- market acceptance of our device formulations or products;
- costs for recruiting and retaining employees and consultants;
- costs for training physicians;
- legal, accounting and other professional costs; and
- the effect of the novel coronavirus will have on our product development, clinical trials, and availability, cost, and type of financing.

In addition, due to the numerous risks and uncertainties associated with product development, including that our product candidates may not advance through development or achieve the endpoints of applicable clinical trials, we are unable to predict the timing or amount of expenses, or when or if we will generate revenue and ultimately be able to achieve or maintain profitability. We may

consume available resources more rapidly than currently anticipated, resulting in the need for additional funding. We may seek to raise any necessary additional funds through equity or debt financings, collaborative arrangements with corporate partners or other sources, which may be dilutive to existing stockholders or otherwise have a material effect on our current or future business prospects. If adequate funds are not available, we may be required to significantly reduce or refocus our development and commercialization efforts with regard to our delivery technologies and our proposed formulations and products.

We have incurred losses since inception and we expect our operating expenses to increase in the foreseeable future, which may make it more difficult for us to achieve and maintain profitability.

We have no significant operating history and since inception to December 31, 2024 have incurred accumulated losses of approximately \$85.0 million. We will continue to incur significant expenses for development activities for our lead product candidate NELL-1/DBM.

We will continue to attempt to raise additional capital through debt and/or equity financing to provide additional working capital and fund future operations. However, there is no assurance that such financing will be consummated or obtained in sufficient amounts necessary to meet our needs. If cash resources are insufficient to satisfy our on-going cash requirements, we will be required to scale back or discontinue our product development programs, or obtain funds if available (although there can be no certainties) through strategic alliances that may require us to relinquish rights to our technology, or substantially reduce or discontinue our operations entirely. No assurance can be given that any future financing will be available or, if available, that it will be on terms that are satisfactory to us. Even if we are able to obtain additional financing, it may contain undue restrictions on our operations, in the case of debt financing, or cause substantial dilution for our stockholders, in the case of equity financing. As a result, we can provide no assurance as to whether or if we will ever be profitable. If we are not able to achieve and maintain profitability, the value of our company and our common stock could decline significantly.

We face a number of risks associated with the incurrence of substantial debt which could adversely affect our financial condition.

If we incur a substantial amount of debt, we may be required to use a significant portion of any cash flow to pay principal and interest on the debt, which will reduce the amount available to fund working capital, capital expenditures, and other general purposes. Any indebtedness may negatively impact our ability to operate our business and limit our ability to borrow additional funds by increasing our borrowing costs, and impact the terms, conditions, and restrictions contained in possible future debt agreements, including the addition of more restrictive covenants; impact our flexibility in planning for and reacting to changes in our business as covenants and restrictions contained in possible future debt arrangements may require that we meet certain financial tests and place restrictions on the incurrence of additional indebtedness and place us at a disadvantage compared to similar companies in our industry that have less debt.

USE OF PROCEEDS

We estimate that the net proceeds from this offering if 100% of the securities in this offering are sold will be approximately \$[●] million after deducting estimated placement agent fees and estimated offering expenses payable by us and assuming no sale of any pre-funded warrants and no exercise of the warrants. However, because this is a best efforts offering with no minimum number of securities or amount of proceeds as a condition to closing, the actual offering amount, the placement agent's fees and net proceeds to us are not presently determinable and may be substantially less than the maximum amounts set forth on the cover page of this prospectus, and we may not sell all or any of the securities we are offering. As a result, we may receive significantly less in net proceeds.

We intend to use the net proceeds from this offering in the following order of priority: to fund clinical trials, maintain and extend our patent portfolio, and for working capital and other general corporate purposes. The actual allocation of proceeds realized from this offering will depend upon how many securities are sold in this best efforts offering and upon our cash position and working capital requirements. Therefore, as of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. Accordingly, we will have discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the proceeds of this offering. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

CAPITALIZATION

The following table sets forth our capitalization as of December 31, 2024 as follows:

- on an actual basis;
- on a pro forma basis to reflect the issuance and sale by us of 317,060 shares of common stock through our at the market offering program for net proceeds of \$[]; and
- on a pro forma, as adjusted basis to reflect the issuance and sale by us of [●] shares of common stock and accompanying warrants in this offering at an assumed public offering price of \$[●] per share and accompanying warrants (the last reported sale price of our common stock on Nasdaq on [●], 2025) and after deducting placement agent fees and estimated offering expenses payable by us, and assuming no sale of any pre-funded warrants in this offering, no exercise of warrants being offered in this offering, that no value is attributed to such warrants and that such warrants are classified as and accounted for as equity.

The information below is illustrative only. Our capitalization following the closing of this offering will change based on how many securities are sold in the offering, the actual public offering price and other terms of this offering determined at pricing. You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the financial statements and related notes included in the Form 10-K for the year ended December 31, 2024 and subsequent quarterly and annual reports, which are incorporated by reference in this prospectus.

	As of December 31, 2024		
	Actual	Unaudited, Pro Forma	Unaudited, Pro Forma, as Adjusted
Cash	\$ 3,325,131	\$ 3,672,680	\$
Total Liabilities	377,712	377,712	
Stockholders’ Equity			
Preferred Stock, \$0.001 par value per share; 20,000,000 shares authorized; none issued or outstanding at December 31, 2024	—		—
Common stock, \$0.001 par value per share; 100,000,000 shares authorized; 2,953,982 shares issued and outstanding at December 31, 2024; 3,271,042 shares issued and outstanding on a pro forma basis; and [●] shares issued and outstanding on a pro forma, as adjusted basis	2,953	3,270	
Additional paid in capital	88,502,082	88,849,314	
Accumulated Deficit	(85,021,378)	(85,021,378)	
Total stockholders’ equity	3,483,657	3,831,206	
Total capitalization	\$ 3,861,369	\$ 4,208,918	\$

The number of shares of our common stock outstanding set forth in the table above excludes, as of December 31, 2024:

- 194,484 shares of common stock issuable upon exercise of stock options outstanding;
- 1,854,096 shares of common stock issuable upon exercise of outstanding common stock warrants;
- 435,005 shares of common stock reserved for future grants pursuant to our 2015 Equity Incentive Plan;
- [●] shares of our common stock issuable upon the exercise of the warrants to be issued in this offering; and
- [●] shares of our common stock issuable upon the exercise of the placement agent warrants to be issued in this offering.

DILUTION

If you invest in our securities in this offering, your ownership interest will be immediately diluted to the extent of the difference between the combined public offering price per share and accompanying warrants and the pro forma, as adjusted net tangible book value per share of our common stock immediately after this offering.

As of December 31, 2024, we had a historical net tangible book value of \$3,483,657, or \$1.18 per share of common stock, based on 2,953,982 shares of common stock outstanding at December 31, 2024. Our historical net tangible book value per share is the amount of our total tangible assets less our total liabilities at December 31, 2024, divided by 2,953,982 shares of common stock.

Our pro forma net tangible book value as of December 31, 2024, was \$3,831,206, or approximately \$1.17 per share after taking into account the pro forma adjustments described in “Capitalization.”

The information discussed below is illustrative only and will be adjusted based on the actual public offering price, the actual number of securities sold in this offering and other terms of this offering determined at pricing. You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the financial statements and related notes in the Form 10-K for the year ended December 31, 2024 and subsequent quarterly and annual reports, which are incorporated by reference in this prospectus.

After giving effect to the sale of [●] shares of common stock and accompanying warrants in this offering at an assumed public offering price of \$[●], which was the last reported sale price of our common stock on Nasdaq on [●], 2025, and after deducting placement agent fees and estimated offering expenses payable by us, and assuming no sale of any pre-funded warrants in this offering, no exercise of the warrants being offered in this offering, that no value is attributed to such warrants and that such warrants are classified as and accounted for as equity, our pro forma as adjusted net tangible book value as of December 31, 2024 would have been approximately \$[●], or approximately \$[●] per share of common stock. This amount represents an immediate [increase/decrease] in the pro forma net tangible book value after this offering of \$[●] per share to our existing stockholders and an immediate dilution of \$[●] per share to investors participating in this offering. We determine dilution per share to investors participating in this offering by subtracting the pro forma, as adjusted net tangible book value per share after giving effect to this offering from the assumed public offering price per share and accompanying warrants paid by investors participating in this offering. The following table illustrates this dilution:

Assumed public offering price per share and accompanying warrants		\$
Historical net tangible book value per share as of December 31, 2024	\$	1.18
Pro forma adjustments ⁽¹⁾		(0.01)
Pro forma net tangible book value per share	\$	1.17
Decrease in net tangible book value per share attributable to new investors	\$	
Pro forma, as adjusted net tangible book value per share after this offering		
Immediate dilution in pro forma net tangible book value per share to new investors		\$

(1) Represents the issuance of 317,060 shares of common stock through our at the market offering program for net proceeds of \$[].

Each \$0.25 increase (decrease) in the assumed public offering price of \$[●] per share and accompanying warrants would increase (decrease) the pro forma, as adjusted net tangible book value per share after this offering by approximately \$[●] per share and the dilution to new investors purchasing securities in this offering by \$[●] per share, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting placement agent fees and estimated offering expenses payable by us.

We may also increase or decrease the number of shares we are offering. A 500,000 share increase in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase the pro forma, as adjusted net tangible book value per share by approximately \$[●] and decrease the dilution per share to new investors participating in this offering by approximately \$[●], based on an assumed public offering price of \$[●] per share and accompanying warrants, which was the last reported sale price of our common stock on Nasdaq on [●], 2025, remaining the same and after deducting placement agent fees and estimated offering expenses payable by us. Similarly, a 500,000 share decrease in the number of shares offered by us, as set forth on the cover page of this prospectus, would decrease the pro forma, as adjusted net tangible book value per share by approximately \$[●] and increase the dilution per share to new investors participating in this offering by approximately \$[●], based on an assumed public offering price of \$[●] per share, remaining the same and after deducting placement agent fees and estimated offering expenses payable by us.

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

The number of shares of our common stock outstanding set forth in the table above excludes, as of December 31, 2024:

- 194,484 shares of common stock issuable upon exercise of stock options outstanding;
- 1,854,096 shares of common stock issuable upon exercise of outstanding common stock warrants;
- 435,005 shares of common stock reserved for future grants pursuant to our 2015 Equity Incentive Plan;
- [●] shares of our common stock issuable upon the exercise of the warrants to be issued in this offering; and
- [●] shares of our common stock issuable upon the exercise of the placement agent warrants to be issued in this offering.

DESCRIPTION OF SECURITIES

The following description of our capital stock and provisions of our Amended and Restated Certificate of Incorporation, as amended (“Certificate of Incorporation”), and Amended and Restated Bylaws, as amended (“Bylaws”), is only a summary. You should also refer to our Certificate of Incorporation, a copy of which is filed as an exhibit to the registration statement of which this prospectus is a part, and our Bylaws, a copy of which is filed as an exhibit to the registration statement of which this prospectus is a part.

General

Our Certificate of Incorporation authorizes the issuance of up to 100,000,000 shares of common stock, par value \$0.001 per share, and up to 20,000,000 shares of preferred stock, par value \$0.001 per share. As of February 19, 2025, there were 22 shareholders of record of our common stock. The actual number of holders of our common stock is greater than this number of record holders, and includes shareholders who are beneficial owners, but whose shares are held in street name by brokers or held by other nominees. This number of holders of record also does not include shareholders whose shares may be held in trust by other entities.

Common Stock

Each holder of common stock is entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. An election of directors by our stockholders will be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. All other actions by stockholders will be approved by the majority of the votes cast affirmatively or negatively (excluding abstentions and broker non-votes) except as otherwise required by law.

Holders of common stock are entitled to receive proportionately any dividends that may be declared by our Board of Directors, subject to any preferential dividend rights of any series of preferred stock that we may designate and issue. In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately our net assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the preferential rights of any outstanding preferred stock.

Holders of our common stock have no preemptive, subscription, redemption, or conversion rights. The rights, preferences, and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue.

Preferred Stock

Under our Certificate of Incorporation, our Board of Directors has the authority, without further action by stockholders, to designate one or more series of preferred stock and to fix the voting powers, designations, preferences, limitations, restrictions, and relative rights granted to or imposed upon the preferred stock, including dividend rights, conversion rights, voting rights, rights and terms of redemption, liquidation preference, and sinking fund terms, any or all of which may be preferential to or greater than the rights of the common stock.

The authority possessed by our Board of Directors to issue preferred stock could potentially be used to discourage attempts by third parties to obtain control of our company through a merger, tender offer, proxy contest, or otherwise by making such attempts more difficult or more costly. Our Board of Directors may issue preferred stock with voting rights, conversion rights, and other rights that, if exercised, could adversely affect the voting power of the holders of common stock.

Warrants

The following summary of certain terms and provisions of the Series D Warrants and Series E Warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of warrants, the forms of which are filed as exhibits to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the forms of warrant for a complete description of the terms and conditions of the warrants.

Duration and Exercise Price. The Series D Warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the effective date of the Warrant Stockholder Approval, provided however, if the Pricing Conditions are met, the Series D warrants will be exercisable upon issuance (the “Initial Exercise Date”). The Series D Warrants will expire on the five-year anniversary of the Initial Exercise Date. The Series E warrants will have an exercise price of \$[●] per share (100% of the combined public offering price per share of common stock and accompanying warrants) and will be exercisable beginning on the Initial Exercise Date. The Series E Warrants will expire on the 18-month anniversary of the Initial Exercise Date. The exercise price and number of shares of common stock issuable upon exercise of

the warrants is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The warrants will be issued separately from the common stock and pre-funded warrants and may be transferred separately immediately thereafter. The warrants will be issued in certificated form only.

Exercise Limitation. The warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of such holder's warrants to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days' prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder's warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the warrants..

Cashless Exercise. If, at the time a holder exercises its warrants, a registration statement registering the issuance or resale of the shares of common stock underlying the warrants under the Securities Act of 1933, as amended (the "Securities Act"), is not then effective or available for the issuance of such shares, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the warrant.

Fractional Shares. No fractional shares of common stock will be issued upon the exercise of the warrants. Rather, the number of shares of common stock to be issued will, at our election, either be rounded up to the next whole share or we will pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price.

Transferability. Subject to applicable laws, a warrant may be transferred at the option of the holder upon surrender of the warrant to us together with the appropriate instruments of transfer.

Trading Market. There is no established trading market for the warrants, and we do not expect such a market to develop. We do not intend to apply to list the warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the warrants will be extremely limited.

Fundamental Transactions. In the event of a fundamental transaction, as described in the warrants and generally including any reorganization, recapitalization or reclassification of our shares of common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of 50% or more of the voting power represented by our outstanding shares of capital stock, any person or group becoming the beneficial owner of 50% or more of the voting power represented by our outstanding shares of capital stock, any merger with or into another entity or a tender offer or exchange offer approved by more than 50% of the voting power represented by our outstanding shares of capital, then upon any subsequent exercise of a warrant, the holder will have the right to receive as alternative consideration, for each share of our common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of our common stock for which the warrant is exercisable immediately prior to such event. Notwithstanding the foregoing, in the event of a fundamental transaction, the holders of the warrants have the right to require us or a successor entity to redeem the warrants for cash in the amount of the Black-Scholes Value (as defined in each warrant) of the unexercised portion of the warrants concurrently with or within 30 days following the consummation of a fundamental transaction. However, in the event of a fundamental transaction which is not in our control, including a fundamental transaction not approved by our Board, the holders of the warrants will only be entitled to receive from us or our successor entity, as of the date of consummation of such fundamental transaction the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of the warrant that is being offered and paid to the holders of our common stock in connection with the fundamental transaction, whether that consideration is in the form of cash, stock or any combination of cash and stock, or whether the holders of our common stock are given the choice to receive alternative forms of consideration in connection with the fundamental transaction.

Right as a Stockholder. Except as otherwise provided in the warrants or by virtue of such holder's ownership of shares of our common stock, the holders of the warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their warrants.

Pre-Funded Warrants

The following summary of certain terms and provisions of the pre-funded warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the pre-funded warrant, the form of which will be filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of pre-funded warrant for a complete description of the terms and conditions of the pre-funded warrants.

Duration and Exercise Price. Each pre-funded warrant offered hereby will have an initial exercise price per share of common stock equal to \$0.001. The pre-funded warrants will be immediately exercisable and may be exercised at any time until all of the pre-funded warrants are exercised in full. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of share dividends, share splits, reorganizations or similar events affecting our shares of common stock and the exercise price.

Exercise Limitation. The pre-funded warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of the pre-funded warrant to the extent that the holder would own more than 4.99% of the outstanding shares of common stock immediately after exercise, except that upon at least 61 days' prior notice from the holder to us, the holder may increase the amount of beneficial ownership of outstanding shares after exercising the holder's pre-funded warrants up to 9.99% of the number of our shares of common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the pre-funded warrants. Purchasers of pre-funded warrants in this offering may also elect prior to the issuance of the pre-funded warrants to have the initial exercise limitation set at 9.99% of our outstanding shares of common stock.

Cashless Exercise. In lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the pre-funded warrants.

Fractional Shares. No fractional shares of common stock will be issued upon the exercise of the pre-funded warrants. Rather, at the Company's election, the number of shares of common stock to be issued will be rounded up to the next whole share or the Company will pay a cash adjustment in an amount equal to such fraction multiplied by the exercise price.

Transferability. Subject to applicable laws, a pre-funded warrant may be transferred at the option of the holder upon surrender of the pre-funded warrants to us together with the appropriate instruments of transfer.

Trading Market. There is no established trading market for the pre-funded warrants, and we do not expect such a market to develop. We do not intend to apply to list the pre-funded warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the pre-funded warrants will be extremely limited.

Fundamental Transaction. In the event of a fundamental transaction, as described in the pre-funded warrants and generally including any reorganization, recapitalization or reclassification of our shares of common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of 50% or more of the voting power represented by our outstanding shares of capital stock, any person or group becoming the beneficial owner of 50% or more of the voting power represented by our outstanding shares of capital stock, any merger with or into another entity or a tender offer or exchange offer approved by more than 50% of the voting power represented by our outstanding shares of capital, then upon any subsequent exercise of a pre-funded warrant, the holder will have the right to receive as alternative consideration, for each share of our common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of our common stock for which the pre-funded warrant is exercisable immediately prior to such event.

Right as a Stockholder. Except as otherwise provided in the pre-funded warrants or by virtue of such holder's ownership of shares of common stock, the holders of the pre-funded warrants do not have the rights or privileges of holders of our shares of common stock, including any voting rights, until they exercise their pre-funded warrants. The pre-funded warrants will provide that the holders of the pre-funded warrants have the right to participate in distributions or dividends paid on our shares of common stock.

Placement Agent Warrants

We have also agreed to issue to the placement agent or its designees as compensation in connection with this offering, the placement agent warrants to purchase up to [●] shares of common stock at an assumed exercise price of \$[●] per share (representing [●]% of the offering price per share and accompanying warrants). The placement agent warrants will expire five years from the commencement of sales in this offering. Except as provided above, the placement agent warrants will have substantially the same terms as the warrants described herein. See "Plan of Distribution—Placement Agent Warrants."

Anti-Takeover Effects of Our Certificate of Incorporation and Bylaws

Certain provisions of our Certificate of Incorporation and Bylaws contain provisions that could have the effect of delaying or discouraging another party from acquiring control of us. These provisions, which are summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids.

Our Certificate of Incorporation and Bylaws include provisions that:

- authorize our Board of Directors to issue, without further action by the stockholders, up to 20,000,000 shares of preferred stock in one or more series designated by the Board of Directors;
- specify that meetings of our stockholders can be called only by our Board of Directors, or any officer instructed by the director to call the meeting; and
- provide that vacancies on our Board of Directors may be filled only by the vote of a majority of the remaining directors even though less than a quorum.

Our Bylaws also provide that stockholders seeking to bring business before our annual meeting of stockholders, or to nominate candidates for election as directors at our annual meeting of stockholders, must provide timely notice of their intent in writing. To be timely, a stockholder's notice must be delivered to the secretary at our principal executive offices not later than the close of business on the 90th day nor earlier than the close of business on the 120th day prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event the date of the annual meeting is more than 30 days before or more than 60 days after such anniversary date, or if no annual meeting was held in the preceding year, notice by the stockholder to be timely must be so delivered not earlier than the close of business on the 120th day prior to such annual meeting and not later than the close of business on the later of the 90th day prior to such annual meeting or the 10th day following the day on which a public announcement of the date of such meeting is first made by us. These provisions may preclude our stockholders from bringing matters before our annual meeting of stockholders or from making nominations for directors at our annual meeting of stockholders.

Delaware Anti-Takeover Statute

We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation such as Bone Biologics Corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the Board of Directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not for determining the outstanding voting stock owned by the interested stockholder, (1) shares owned by persons who are directors and also officers of the corporation and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the date of the transaction, the business combination is approved by the Board of Directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

In this context, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation's outstanding voting stock. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our Board of Directors does not approve in advance. We also anticipate that Section 203 may discourage business combinations or other attempts that might result in a premium over the market price for the shares of common stock held by our stockholders.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Equiniti Trust Company, LLC.

Stock Market Listing

Our common stock is listed on Nasdaq under the symbol "BBLG."

PLAN OF DISTRIBUTION

Pursuant to an engagement agreement, dated [●], 2025 we have engaged [●], the placement agent, to act as our exclusive placement agent to solicit offers to purchase the securities offered pursuant to this prospectus on a best efforts basis. The engagement agreement does not give rise to any commitment by the placement agent to purchase any of our securities, and the placement agent will have no authority to bind us by virtue of the engagement agreement. The placement agent is not purchasing or selling any of the securities offered by us under this prospectus, nor is it required to arrange for the purchase or sale of any specific number or dollar amount of securities. This is a best efforts offering and there is no minimum offering amount required as a condition to the closing of this offering. The placement agent has agreed to use reasonable best efforts to arrange for the sale of the securities by us. Therefore, we may not sell all of the shares of common stock, pre-funded warrants and warrants being offered. The terms of this offering are subject to market conditions and negotiations between us, the placement agent and prospective investors. The placement agent does not guarantee that it will be able to raise new capital in any prospective offering. The placement agent may engage sub-agents or selected dealers to assist with the offering.

Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. In addition to rights and remedies available to all purchasers in this offering under federal securities and state law, the purchasers which enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. The ability to pursue a claim for breach of contract provides those investors with the means to enforce the covenants uniquely available to them under the securities purchase agreement including: (i) timely delivery of shares; (ii) agreement to not enter into variable rate financings for [●] from closing, subject to certain exceptions; (iii) agreement to not enter into any financings for [●] days from closing; and (iv) indemnification for breach of contract.. The nature of the representations, warranties and covenants in the securities purchase agreements shall include:

- standard issuer representations and warranties on matters such as organization, qualification, authorization, no conflict, no governmental filings required, current in SEC filings, no litigation, labor or other compliance issues, environmental, intellectual property and title matters and compliance with various laws such as the Foreign Corrupt Practices Act; and
- covenants regarding matters such as registration of warrant shares, no integration with other offerings, no stockholder rights plans, no material nonpublic information, use of proceeds, indemnification of purchasers, reservation and listing of shares of common stock, and no subsequent equity sales for [●] days.

We will deliver the securities being issued to the investors upon receipt of investor funds for the purchase of the securities offered pursuant to this prospectus. We expect to deliver the securities being offered pursuant to this prospectus on or about [●], 2025. There is no minimum number of securities or amount of proceeds that is a condition to closing of this offering.

Fees and Expenses

We have agreed to pay the placement agent a total cash fee equal to [●]% of the aggregate gross proceeds raised in the offering. We have also agreed to pay the placement agent a management fee of [●]% of the aggregate gross proceeds raised in this offering and to reimburse the placement agent a nonaccountable expense allowance of \$[●], its legal fees and expenses in an amount up to \$[●] and its clearing expense in an amount up to \$[●] in connection with this offering. We estimate the total offering expenses of this offering that will be payable by us, excluding the placement agent fees and expenses, will be approximately \$[●].

The following table shows the public offering price, placement agent fees and proceeds, before expenses, to us, in this offering.

	Per Share and Accompanying Warrants	Per Pre- Funded Warrant and Accompanying Warrants	Total
Public offering price	\$	\$	\$
Placement Agent fees	\$	\$	\$
Proceeds to us (before expenses)	\$	\$	\$

Placement Agent Warrants

In addition, we have agreed to issue to the placement agent or its designees warrants, or the placement agent warrants, to purchase up to [●]% of the aggregate number of shares of common stock sold in this offering (including shares underlying any pre-funded warrants), at an exercise price equal to [●]% of the public offering price per share and accompanying warrants to be sold in this offering. The

placement agent warrants will be exercisable upon issuance and will expire five years from the commencement of sales under this offering.

If at the time of exercise there is no effective registration statement registering, or the prospectus contained therein is not available for the resale of warrant shares by the holders of the placement agent warrants, then the placement agent warrants may be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the holders shall be entitled to receive a number of warrant shares as calculated in the placement agent warrants.

The placement agent warrants provide for customary anti-dilution provisions (for share dividends, splits and recapitalizations and the like) consistent with FINRA Rule 5110.

Tail

In the event that any investors that contacted by the placement agent during the term of our engagement agreement with the placement agent provide any capital to us in a public or private offering or capital-raising transaction within [●] following the termination or expiration of our engagement agreement with the placement agent, we shall pay the placement agent the cash and warrant compensation provided above on the gross proceeds from such investors. The placement agent will only be entitled to such fee to the extent that the parties are directly introduced to us by the placement agent, in accordance with FINRA Rule 2010.

Right of First Refusal

From the date of the engagement agreement until the [●] anniversary following consummation of each offering of our securities during the term of the engagement agreement, subject to compliance with FINRA Rule 5110 (g)(6)(A), if we or any of our subsidiaries (a) engage in certain transactions, including but not limited to, disposition or acquisition of outstanding securities, tender offers, mergers, consolidations or other business combinations as set forth in the engagement letter, the placement agent (or any affiliate designated by the placement agent) shall have the right to act as the Company's exclusive financial advisor for any such transaction, (b) decides to finance or refinance any indebtedness, the placement agent (or any affiliates designated by the placement agent), shall have the right to act as sole book-runner, sole manager, sole placement agent or sole agent with respect to such financing or refinancing or (c) decides to raise funds by means of a public offering (excluding an at-the-market facility) or a private placement or any other capital-raising financing of equity, equity-linked or debt securities, the placement agent (or any affiliate designated by the placement agent) shall have the right to act as sole book-running manager, sole underwriter or sole placement agent for such financing.

Lock-Up Agreements

Our officers and directors have agreed with the placement agent to be subject to a lock-up period of [●] days following the closing of this offering. This means that, during the applicable lock-up period, such persons may not offer for sale, contract to sell, sell, distribute, grant any option, right or warrant to purchase, pledge, hypothecate or otherwise dispose of, directly or indirectly, any shares of our common stock or any securities convertible into, or exercisable or exchangeable for, shares of our common stock. Certain limited transfers are permitted during the lock-up period if the transferee agrees to these lock-up restrictions. We have also agreed to similar lock-up restrictions on the issuance and sale of our securities for [●] days following the closing of this offering, subject to certain exceptions. The placement agent may, in its sole discretion and without notice, waive the terms of any of these lock-up agreements.

In addition, subject to certain exceptions, we have agreed to not issue any securities that are subject to a price reset based on the trading prices of our common stock or upon a specified or contingent event in the future, or enter into any agreement to issue securities at a future determined price for a period of [●] following the closing date of this offering.

Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including certain liabilities under the Securities Act, or to contribute to payments that the placement agent may be required to make in respect of those liabilities.

In addition, we will indemnify the purchasers of securities in this offering against liabilities arising out of or relating to (i) any breach of any of the representations, warranties, covenants or agreements made by us in the securities purchase agreement or related documents or (ii) any action instituted against a purchaser by a third party (other than a third party who is affiliated with such purchaser) with respect to the securities purchase agreement or related documents and the transactions contemplated thereby, subject to certain exceptions

Regulation M Compliance

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any fees received by it and any profit realized on the sale of our securities offered hereby by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. The placement agent will be required to comply with the requirements of the Securities Act and the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent. Under these rules and regulations, the placement agent may not (i) engage in any stabilization activity in connection with our securities; and (ii) bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until they have completed their participation in the distribution.

Other Relationships

The placement agent and its affiliates have engaged, and may in the future engage, in investment banking transactions and other commercial dealings in the ordinary course of business with us or our affiliates. The placement agent has received, or may in the future receive, customary fees and commissions for these transactions.

In addition, in the ordinary course of their business activities, the placement agent and its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The

placement agent and its affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Electronic Distribution

A prospectus in electronic format may be made available on a website maintained by the placement agent and the placement agent may distribute prospectuses electronically. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or the placement agent and should not be relied upon by investors.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Equiniti Trust Company, LLC.

Stock Market Listing

Our common stock is listed on Nasdaq under the symbol "BBLG."

LEGAL MATTERS

The validity of the issuance of the common stock offered by us in this offering will be passed upon for us Harter Secrest & Emery LLP, Rochester, NY. Certain legal matters in connection with this offering will be passed upon for the placement agent by [●].

EXPERTS

The consolidated financial statements of Bone Biologics Corporation appearing in Bone Biologics Corporation's Annual Report (Form 10-K) for the year ended December 31, 2024, have been audited by Weinberg & Company, P.A., as set forth in their report therein, which includes an explanatory paragraph as to the Company's ability to continue as a going concern, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to "incorporate by reference" information into this document, 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 an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information.

We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act made subsequent to the date of this prospectus until the termination of the offering of the securities described in this prospectus (other than information in such filings that was "furnished," under applicable SEC rules, rather than "filed"). We incorporate by reference the following documents or information that we have filed with the SEC:

- our Annual Report on [Form 10-K](#) for the year ended December 31, 2024, filed with the SEC on February 26, 2025 and
- The description of the Common Stock incorporated by reference to our Registration Statement on [Form 8-A](#) that was filed with the SEC on October 8, 2021, Exhibit 4.5 to Amendment No. 1 to our Annual Report on Form 10-K for the fiscal year ended December 31, 2022 on [Form 10-K/A](#) filed with the SEC on November 20, 2023, and any amendment or report filed for the purpose of updating such description.

To obtain copies of these filings, see "Where You Can Find More Information" in this prospectus. Nothing in this prospectus shall be deemed to incorporate information furnished, but not filed, with the SEC, including pursuant to Item 2.02 or Item 7.01 of Form 8-K and any corresponding information or exhibit furnished under Item 9.01 of Form 8-K.

Information in this prospectus supersedes related information in the documents listed above and information in subsequently filed documents supersedes related information in both this prospectus and the incorporated documents.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the periodic reporting requirements of the Exchange Act, and we will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information are available at www.sec.gov. We maintain a website at www.bonebiologics.com. We have not incorporated by reference into this prospectus the information contained in, or that can be accessed through, our website, and you should not consider it to be a part of this prospectus. You may access our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. You may also request a copy of these filings (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus), at no cost, by writing us at 2 Burlington Woods Drive, Suite 100, Burlington, MA 01803 or contacting us at (781) 552-4452.

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 attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You may review a copy of the registration statement and any documents incorporated by reference herein through the SEC's website at www.sec.gov.

BONE BIOLOGICS CORPORATION

Up to [●] Shares of Common Stock

Up to [●] Prefunded Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Prefunded Warrants

Up to [●] Series D Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Series D Warrants

Up to [●] Series E Warrants to purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock underlying the Series E Warrants

Up to [●] Placement Agent Warrants to Purchase up to [●] Shares of Common Stock

Up to [●] Shares of Common Stock Underlying the Placement Agent Warrants

Prospectus
[●], 2025

PART II — INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution

The following table sets forth all expenses, other than the placement agent fees, payable by the registrant in connection with the sale of the securities being registered. All the amounts shown are estimates except the SEC registration fee and the FINRA filing fee.

	<u>Amount to be paid</u>
SEC registration fee	\$
FINRA filing fee	
Transfer agent and registrar fees	
Accounting fees and expenses	
Legal fees and expenses	
Printing and engraving expenses	
Miscellaneous	-
Total	<u>\$</u>

Item 14. Indemnification of Directors and Officers

Section 102 of the Delaware General Corporation Law (“DGCL”) permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty to us or our stockholders, acted or failed to act (an omission) not in good faith or that involved intentional misconduct or a knowing violation of law, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of the DGCL, or obtained an improper personal benefit. Our Amended and Restated Certificate of Incorporation, as amended (“Certificate of Incorporation”) provides that no director of the Company shall be personally liable to it or its stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the DGCL prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the DGCL provides that a corporation has the power to indemnify a director, officer, employee, or agent of the corporation, or a person serving at the request of the corporation for another corporation, partnership, joint venture, trust or other enterprise in related capacities against expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he was or is a party or is threatened to be made a party to any threatened, ending or completed action, suit or proceeding by reason of such position, if such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Our Certificate of Incorporation and Amended and Restated Bylaws, as amended (“Bylaws”), provide indemnification for our directors and officers to the fullest extent permitted by the DGCL. We will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding (other than an action by or in the right of us) by reason of the fact that he or she is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an “Indemnitee”), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom, if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful. Our Certificate of Incorporation and Bylaws provide that we will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys’ fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be

made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys' fees) actually and reasonably incurred in connection therewith. Expenses must be advanced to an Indemnitee under certain circumstances.

As of the date of this prospectus, we have entered into separate indemnification agreements with each of our directors and executive officers. Each indemnification agreement provides, among other things, for indemnification to the fullest extent permitted by law and our Certificate of Incorporation against any and all expenses, judgments, fines, penalties and amounts paid in settlement of any claim. The indemnification agreements provide for the advancement or payment of all expenses to the indemnitee and for the reimbursement to us if it is found that such indemnitee is not entitled to such indemnification. In addition, we have obtained a general liability insurance policy that covers certain liabilities of directors and officers of our corporation arising out of claims based on acts or omissions in their capacities as directors or officers.

Item 15. Recent Sales of Unregistered Securities

The information below lists all of the securities sold by us during the past three years which were not registered under the Securities Act of 1933, as amended (the “Securities Act”):

- On November 16, 2023, we sold registered shares of common stock in a registered direct offering and contemporaneously therewith sold unregistered warrants to purchase up to an aggregate of 142,384 shares of our common stock in a private placement, to certain institutional investors, for approximately \$729,000. The warrants were sold in reliance on the exemptions from registration provided by Section 4(a)(2) under the Securities Act and/or Regulation D promulgated thereunder.
- On November 16, 2023, we issued warrants to purchase up to an aggregate of 8,543 shares of our common stock to H.C. Wainwright & Co., LLC (equal to 6.0% of the aggregate number of shares of common stock sold in a registered direct offering) in connection with the services it provided as placement agent in the registered direct offering and private placement, in reliance on the exemptions from registration provided by Section 4(a)(2) under the Securities Act and/or Regulation D promulgated thereunder.
- On August 2, 2024, we issued (i) new unregistered five-year warrants to purchase up to an aggregate of 781,251 shares of common stock and (ii) new unregistered eighteen-month warrants to purchase up to an aggregate of 781,251 shares of common stock to holders of existing warrants to purchase 781,251 shares of common stock in exchange for their exercise of the existing warrants for approximately \$1.8 million. The unregistered warrants were issued in reliance on the exemption from registration provided by Section 4(a)(2) under the Securities Act.
- On August 2, 2024, we issued unregistered warrants to purchase up to an aggregate of 46,875 shares of our common stock to H.C. Wainwright & Co., LLC in connection with the services provided as placement agent in the warrant inducement transaction described above. The warrants were issued in reliance on the exemption from registration provided by Section 4(a)(2) under the Securities Act.

Item 16. Exhibits and Financial Statement Schedules

The following exhibits to this registration statement included in the Exhibit Index are incorporated by reference.

EXHIBIT INDEX

Exhibit Number	Exhibit Title	Incorporated by reference (unless otherwise indicated)			
		Form	File	Exhibit	Filing date
2.1	Agreement and Plan of Merger, dated as of September 19, 2014, by and among AFH Acquisition X, Inc., Bone Biologics Acquisition Corp., and Bone Biologics, Inc.	8-K	000-53078	2.1	September 25, 2014
2.2	Certificate of Merger as filed with the California Secretary of State effective September 19, 2014	8-K	000-53078	2.2	September 25, 2014
3.1	Amended and Restated Certificate of Incorporation of Bone Biologics Corporation	8-K	000-53078	3.1(i)	September 25, 2014
3.2	Certificate of Amendment to Amended and Restated Certificate of Incorporation of Bone Biologics Corporation	8-K	000-53078	3.1	October 15, 2021
3.3	Certificate of Amendment to Amended and Restated Certificate of Incorporation of Bone Biologics Corporation	8-K	001-40899	3.1	June 6, 2023
3.4	Certificate of Amendment to Amended and Restated Certificate of Incorporation of Bone Biologics Corporation	8-K	001-40899	3.1	December 18, 2023
3.5	Amended and Restated Bylaws of Bone Biologics Corporation	8-K	001-40899	3.1	March 8, 2022
3.6	Amendment No. 1 to the Amended and Restated Bylaws of Bone Biologics Corporation	8-K	001-40899	3.1	October 24, 2023
4.1	Warrant Agent Agreement between the Company and Equiniti Trust Company dated as of October 13, 2021	8-K	000-53078	4.1	October 15, 2021
4.2	Form of Warrant (October 2021)	S-1	333-276771	4.2	January 30, 2024
4.3	Form of Representative's Warrant (October 2021)	8-K	000-53078	1.1	October 15, 2021

4.4	Warrant Agent Agreement between the Company and Equiniti Trust Company dated as of October 7, 2022	8-K	001-40899	4.1	October 11, 2022
4.5	Form of Series A Warrant (October 2022)	S-1	333-276771	4.5	January 30, 2024
4.6	Form of Series B Warrant (October 2022)	S-1	333-276771	4.6	January 30, 2024
4.7	Form of Series C Warrant (October 2022)	S-1	333-276771	4.7	January 30, 2024
4.8	Form of Representative's Warrant (October 2022)	8-K	001-40899	1.1	October 11, 2022
4.9	Form of Warrant (November 2023)	S-3	333-276412	4.1	January 5, 2024
4.10	Form of Placement Agent Warrant (November 2023)	8-K	001-40899	4.2	November 20, 2023
4.11	Form of Warrant dated March 6, 2024	8-K	001-40899	4.1	March 6, 2024
4.12	Form of Placement Agent Warrant dated March 6, 2024	8-K	001-40899	4.3	March 6, 2024
4.13	Form of New Warrant dated August 2, 2024	8-K	001-40899	4.1	August 2, 2024
4.14	Form of Placement Agent Warrant dated August 2, 2024	8-K	001-40899	4.2	August 2, 2024
4.15	Description of Securities	10-K/A	001-40899	4.5	November 20, 2023
4.16**	Form of Series D Warrant	—	—	—	—
4.17**	Form of Series E Warrant	—	—	—	—
4.18**	Form of Pre-Funded Warrant	—	—	—	—
4.19**	Form of Placement Agent Warrant	—	—	—	—
5.1**	Opinion of Harter Secrest & Emery LLP	—	—	—	—
10.1+	Director Offer Letter, dated July 1, 2014, by and between Bruce Stroever and Bone Biologics Corporation	8-K	000-53078	10.4	September 25, 2014
10.2+	Form of Indemnification Agreement	S-1	333-276771	10.2	January 30, 2024
10.3+	Amended and Restated Employment Agreement, dated January 1, 2024, by and between Bone Biologics Corporation and Jeffrey Frelick	10-Q	001-40899	10.2	May 14, 2024

10.4+	Employment Agreement dated December 17, 2021 between the Company and Deina Walsh	8-K	001-40899	10.1	December 22, 2021
10.5+	Amendment No. 1 to Employment Agreement dated December 17, 2021 between the Company and Deina Walsh	10-Q	001-40899	10.3	May 14, 2024
10.6+	Form of Professional Services Agreement, dated January 8, 2016, by and between the Company and the Founders	8-K	000-53078	10.1	January 11, 2016
10.7+	Bone Biologics Corporation Non-Employee Director Compensation Policy	8-K	000-53078	10.1	January 4, 2016
10.8+	Bone Biologics Corporation 2015 Equity Incentive Plan	8-K	000-53078	10.3	January 4, 2016
10.9+	First Amendment to the Bone Biologics Corporation 2015 Equity Incentive Plan	Schedule 14A	001-40899	Appendix B	August 3, 2023
10.10+	Form of Stock Option Grant Notice and Option Agreement for the Bone Biologics Corporation 2015 Equity Incentive Plan	8-K	000-53078	10.4	January 4, 2016
10.11+	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement	8-K	000-53078	10.5	January 4, 2016
10.12	Option Agreement for the Distribution and Supply of Sygnal™ dated as of February 24, 2016	8-K	000-53078	10.3	February 26, 2016
10.13	Amended and Restated Exclusive License Agreement, dated as of March 21, 2019, by and between the Company and The Regents of the University of California	8-K	000-53078	10.1	April 16, 2019
10.14	First Amendment to the Amended License Agreement dated August 13, 2020 between the Company and the Regents of the University of California	S-1/A	333-257484	10.40	October 7, 2021
10.15	Third Amendment to the Amended License Agreement dated June 8, 2022 between the Company and the Regents of the University of California	8-K	001-40899	10.1	June 9, 2022
10.16	Supply and Development Support Agreement dated March 3, 2022 between the Company and Musculoskeletal Transplant Foundation, Inc.	10-K	001-40899	10.30	March 15, 2022
10.19	At The Market Offering Agreement, dated September 27, 2024, by and between Bone Biologics Corporation and H.C. Wainwright & Co., LLC	8-K	001-40899	1.1	September 27, 2024
10.20**	Form of Securities Purchase Agreement	—	—	—	—
21.1	List of Subsidiaries	10-K	001-40899	21.1	February 26, 2025
23.1**	Consent of Independent Registered Public Accounting Firm, Weinberg & Company, P.A.	—	—	—	—

23.2**	Consent of Harter Secrest & Emery LLP (included in Exhibit 5.1)	—	—	—	—
24**	Power of Attorney (included in signature page hereto)	—	—	—	—
107**	Filing Fee Table	—	—	—	—

** To be filed by amendment, if required

+ Management contract or compensatory arrangement.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

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

provided, however, that the undertakings set forth in paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement or are contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
 - (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
 - (4) For the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
- (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the

registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(d) That,

- (1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance on Rule 430A and contained in a form of prospectus filed by the undersigned registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective; and
- (2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the Town of Burlington, Commonwealth of Massachusetts, on [●], 2025.

BONE BIOLOGICS CORPORATION

By: _____
Name: Jeffrey Frelick
Title: Chief Executive Officer
(Principal Executive Officer)

POWER OF ATTORNEY

Each person whose signature appears below appoints Jeffrey Frelick and Deina H. Walsh, and each of them, each of whom may act without the joinder of the other, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution for him and her and in his or her name, place and stead, in any and all capacities to sign any and all amendments (including post-effective amendments) to this registration statement (and to any registration statement filed pursuant to Rule 462 under the Securities Act of 1933, as amended), and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully to all intents and purposes as he might or would do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
_____ Jeffrey Frelick	Chief Executive Officer (Principal Executive Officer)	[●], 2025
_____ Deina H. Walsh	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	[●], 2025
_____ Bruce Stroever	Director	[●], 2025
_____ Siddhesh Angle	Director	[●], 2025
_____ Robert Gagnon	Director	[●], 2025
_____ Phil Meikle	Director	[●], 2025