

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

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

TELA Bio, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

45-5320061

(I.R.S. Employer
Identification Number)

**1 Great Valley Parkway, Suite 24
Malvern, Pennsylvania 19355
(484) 320-2930**

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

**Antony Koblish
Chief Executive Officer
TELA Bio, Inc.**

**1 Great Valley Parkway, Suite 24
Malvern, Pennsylvania 19355
(484) 320-2930**

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

Copies to:

**Rachael M. Bushey, Esq.
Justin S. Platt, Esq.
Goodwin Procter LLP
3025 John F. Kennedy Boulevard,
8th Floor
Philadelphia, PA 19104
(445) 207-7800**

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

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

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

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

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

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

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

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

Large accelerated filer
Non-accelerated filer

Accelerated filer
Smaller reporting company
Emerging growth company

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

Subject to Completion, dated December 12, 2025.

PROSPECTUS



Up to 2,000,000 Shares of Common Stock

This prospectus relates to the resale by the selling stockholder named herein, or its pledgees, donees, transferees or other successors in interest, from time to time, of up to 2,000,000 shares, or the Shares, of our common stock, par value \$0.001 per share, or common stock, issuable upon exercise of a warrant, or the Warrant, issued to Perceptive Credit Holdings V, LP, or Perceptive, in connection with that certain Credit Agreement and Guaranty, or the Credit Agreement, dated as of November 13, 2025, by and between us and certain of our subsidiaries and Perceptive, as lender and administrative and collateral agent. We are registering the shares on behalf of the selling stockholder, to be offered and sold from time to time, to satisfy certain registration rights that we have granted to the selling stockholder. We will not receive any of the proceeds from the sale of the Shares by the selling stockholder.

The selling stockholder may resell or dispose of the Shares, or interests therein, at fixed prices, at prevailing market prices at the time of sale or at prices negotiated with purchasers, to or through underwriters, broker-dealers, agents, or through any other means described in the section of this prospectus entitled "Plan of Distribution." The selling stockholder will bear its own commissions and discounts, if any, attributable to the sale or disposition of the Shares, or interests therein, held by such selling stockholder. We will bear all costs, expenses and fees in connection with the registration of the Shares. To the extent the Warrant is exercised on a cash basis, if at all, we will receive proceeds from the exercise of the Warrant. We cannot predict when or in what amounts the selling stockholder may sell any of the Shares offered by this prospectus.

Our common stock is listed on the Nasdaq Global Market, or Nasdaq, under the symbol "TELA." On December 11, 2025, the last reported sale price of our common stock on Nasdaq was \$1.13 per share.

INVESTING IN OUR COMMON STOCK INVOLVES RISKS. SEE THE "RISK FACTORS" ON PAGE 8 OF THIS PROSPECTUS CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR COMMON STOCK.

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

The date of this prospectus is _____, 2025.

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

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	1
PROSPECTUS SUMMARY	3
THE OFFERING	7
RISK FACTORS	8
CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	9
USE OF PROCEEDS	11
DESCRIPTION OF CAPITAL STOCK	12
SELLING STOCKHOLDER	15
PLAN OF DISTRIBUTION	17
LEGAL MATTERS	20
EXPERTS	21
WHERE YOU CAN FIND MORE INFORMATION	22
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	22

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, pursuant to which the selling stockholder named herein may, from time to time, offer and sell or otherwise dispose of the shares of our common stock covered by this prospectus.

You should not assume that the information contained in this prospectus is accurate on any date subsequent to the date set forth on the front cover of this prospectus or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus is delivered or shares of common stock are sold or otherwise disposed of on a later date. It is important for you to read and consider all information contained in this prospectus, including the documents incorporated by reference therein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you under “Where You Can Find More Information” and “Incorporation of Certain Information by Reference” in this prospectus.

Neither we, nor the selling stockholder, have authorized anyone to provide you with any information or to make any representations other than those contained in, or incorporated by reference in, this prospectus, any post-effective amendment, or any applicable prospectus supplement prepared by or on behalf of us or to which we have referred you. We and the selling stockholder take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the selling stockholder will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus, any post-effective amendment and any applicable prospectus supplement to this prospectus is accurate only as of the date on its respective cover, and that any information incorporated by reference herein and therein is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus incorporates by reference, and any post-effective amendment or any prospectus supplement may contain or incorporate by reference, estimates, projections and other information concerning our industry, the general business environment, and the markets for certain diseases, including estimates regarding the potential size of those markets and the estimated incidence and prevalence of certain medical conditions. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties, and actual events, circumstances or numbers, including actual disease prevalence rates and market size, may differ materially from the information included or incorporated by reference into this prospectus and any post-effective amendment or any prospectus supplement. Unless otherwise expressly stated, we obtained this industry, business information, market data, prevalence information and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data, and similar sources, in some cases applying our own assumptions and analysis that may, in the future, prove not to have been accurate.

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

This prospectus contain summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents incorporated by reference herein, and you may obtain copies of those documents as described below under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

When we refer to “TELA,” “we,” “our,” “us” and the “Company” in this prospectus, we mean TELA Bio, Inc. and its wholly owned subsidiary unless otherwise specified. When we refer to “you,” we mean the potential purchasers of the shares.

“TELA,” the TELA logo, TELA Bio[®], OviTex[®] and other trademarks, trade names or service marks of TELA Bio, Inc. appearing in this prospectus, any post-effective amendment, or any applicable prospectus supplement are the property of TELA Bio, Inc. All other trademarks, trade names and service marks appearing in this prospectus, any post-effective amendment, or any applicable prospectus supplement are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus, any post-effective amendment, or any applicable prospectus supplement may be referred to without the [®] and [™] symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the rights of the applicable licensor to these trademarks and tradenames.

PROSPECTUS SUMMARY

This summary description about us, our business and this offering highlights selected information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before deciding to invest in our common stock. You should carefully read this entire prospectus before making an investment decision. For a more complete understanding of our company, you should read and consider carefully the more detailed information included or incorporated by reference in this prospectus and any applicable prospectus supplement, including the factors described under the heading “Risk Factors” of this prospectus, as well as the information incorporated by reference from our most recent Annual Report on Form 10-K and our most recent Quarterly Report on Form 10-Q, before making an investment decision. Purchasers should carefully consider the information set forth under “Risk Factors” on page 8 and in the documents incorporated by reference into this prospectus and any accompanying prospectus.

The Company

We are a commercial-stage medical technology company focused on providing innovative soft-tissue reconstruction solutions that optimize clinical outcomes by prioritizing the preservation and restoration of the patient’s own anatomy. Our growing product portfolio is purposefully designed to leverage the patient’s natural healing response while minimizing long-term exposure to permanent synthetic materials. We are committed to delivering our advanced technologies with a strong economic value proposition to assist surgeons and institutions in providing next-generation soft-tissue repair solutions to more patients worldwide.

We are dedicated to building true partnerships with surgeons and healthcare providers to deliver solutions that provide both clinical and economic improvements. We believe that genuine collaboration with surgeons and healthcare providers results in the development of new solutions that empower patient care and addresses unmet needs within the soft tissue reconstruction market.

Our first portfolio of products, the OviTex Reinforced Tissue Matrix, or OviTex, which we first commercialized in the United States, or U.S., in July 2016 and in Europe in February 2019, addresses unmet needs in hernia repair and abdominal wall reconstruction by combining the benefits of biologic matrices and polymer materials while minimizing their shortcomings, at a cost-effective price.

Hernia repair is one of the most common surgeries performed in the U.S., representing approximately 1.2 million procedures annually. Based on the volume weighted average selling price of our OviTex products, we estimate the annual U.S. total addressable market opportunity for our OviTex products to be approximately \$1.8 billion.

Our OviTex portfolio consists of multiple product configurations intended to address various surgical procedures within hernia repair and abdominal wall reconstruction, including ventral, inguinal, and hiatal hernia repair. In addition, we have also designed an OviTex product specifically for use in laparoscopic and robotic-assisted hernia repair, which we market as OviTex LPR and began commercializing in November 2018. In February 2023, we launched two larger configurations of OviTex LPR, designed for ventral and incisional hernias. In April 2024, we launched OviTex IHR Reinforced Tissue Matrix, a new OviTex configuration specifically designed to address inguinal hernia procedures performed robotically and laparoscopically in the U.S., followed by a launch in the European markets in June 2025.

We have also focused on evaluating and publishing clinical data on the effectiveness and safety of our OviTex products. To date, there have been over forty published or presented works relating to these clinical findings, either by us or a third-party evaluating one or more product configurations in our OviTex portfolio. In October 2022, the 24-month results of our single arm, multicenter post-market clinical study, which we refer to as our BRAVO study, were published in the *Annals of Medicine and Surgery*. The BRAVO study was designed to evaluate the clinical performance of OviTex for primary or recurrent ventral hernias using open, laparoscopic, or robotic techniques in 92 enrolled patients. The recurrence rate at the 24-month time point was 2.6%, and surgical site occurrences, or SSOs, were observed in 38% of the study population. Of the enrolled patients, 78% were characterized as high risk for experiencing an SSO based on at least one known risk factor, which included obesity, active smoking, chronic obstructive pulmonary disease, or COPD, diabetes mellitus, coronary artery disease, or advanced age (≥ 75 years). The results also indicated that BRAVO patients experienced statistically significant and clinically meaningful improvements in their quality of life and

perceived health based on patient responses to the EuroQol-5 Dimension (EQ-5D) health assessment and the validated 12-question Hernia-Related Quality of Life survey (HerQLes). In addition to the BRAVO study, we have also initiated other clinical data collection initiatives evaluating the use of OviTex across a variety of hernia and abdominal wall reconstruction procedures. Among these other initiatives, we continue to enroll patients for our BRAVO II study, a prospective study evaluating the use of OviTex in robot-assisted ventral and inguinal hernia repairs.

Our second portfolio of products, the OviTex PRS Reinforced Tissue Matrix, or OviTex PRS, which we first commercialized in the U.S. in May 2019, addresses unmet needs in plastic and reconstructive surgery. OviTex PRS is indicated for use in implantation to reinforce soft-tissue where weakness exists in patients requiring soft-tissue repair or reinforcement in plastic and reconstructive surgery. Our OviTex PRS portfolio consists of three product configurations with two or three layers of high-quality tissue derived from ovine rumen, which is reinforced with either permanent or resorbable polymer for added strength, stabilization, and controlled stretch. These products are designed to improve outcomes by facilitating functional tissue remodeling while controlling the degree and direction of stretch.

OviTex PRS Long-Term Resorbable, our most recent product configuration, launched in August 2023, and was designed to enhance the OviTex PRS portfolio with specific design features including bi-directional stretch and a fully resorbable, long-term polymer for reinforcement. In March 2025, we announced the U.S. launch of larger sizes of OviTex PRS, which we believe may reduce the need for multiple smaller pieces and have the potential to simplify more complex plastic and reconstructive procedures.

Our OviTex PRS portfolio is supported by non-human primate data that demonstrated more rapid tissue integration and tissue remodeling compared to the market leading biologic matrix used in this indication. In addition, there have been a growing number of published or presented works evaluating the use of OviTex PRS in plastic and reconstruction applications. We also continue to enroll patients in our OPERA study, a retrospective-prospective trial evaluating the safety profile of OviTex PRS in previous pre-pectoral and sub-pectoral implant-based breast reconstructions. Based on the current sales of biologic matrices in the U.S., we estimate the annual U.S. current addressable market opportunity for our OviTex PRS products to be approximately \$800 million.

Our OviTex products have received 510(k) clearances from the U.S. Food and Drug Administration, or FDA, which clearances were obtained and are currently held by our exclusive contract manufacturer of these products, Aroa Biosurgery Ltd., or Aroa. In April 2019, our first OviTex PRS products received 510(k) clearance from the FDA, which clearance was initially obtained by Aroa and is currently held by us. In March 2023, we received an additional 510(k) clearance for our OviTex PRS Long-Term Resorbable device, which is currently held by us. In May 2024, we received clearance of a Special 510(k) related to minor changes to our OviTex PRS Permanent and Short-Term Resorbable devices. In October 2024, we received approval from the FDA for our investigational device exemption application relating to the study of the safety and effectiveness of our OviTex PRS product in implant-based breast reconstruction. We continue to evaluate and finalize the clinical study protocol and anticipate additional FDA interactions related to such to support a pre-market application to obtain approval for an indication for OviTex PRS for use in breast reconstruction. In December 2024, we received clearance of a Special 510(k) related to two new additional large size product offerings in our OviTex PRS portfolio.

Historically, we have sought to expand our service offerings beyond our OviTex and OviTex PRS products through commercial partnerships to distribute complimentary soft tissue preservation and restoration solutions. Some additional product offerings include or have included atraumatic mesh fixation devices or surgical wound management and infection control solutions. In September 2023, we entered into a distribution agreement with Advanced Medical Solutions Limited, a company registered in England, to distribute their LiquiFix Hernia Mesh Fixation Devices (LIQUIFIX FIX8™ and LIQUIFIX Precision™). In March 2024, we announced the full commercial launch of LiquiFix in the U.S. We previously co-developed and commercialized the NIVIS Fibrillar Collagen Pack, or NIVIS, an absorbent matrix of Type I and Type III bovine collagen designed to manage moderately to heavily exudating wounds and to control minor bleeding, in partnership with Regenity Biosciences. In March 2024, we sold our distribution rights to MiMedx Group, Inc. in exchange for an initial \$5.0 million payment and additional future payments aggregating between a minimum of \$3.0 million and a maximum of \$7.0 million based on net sales of NIVIS (now marketed as HELIOGEN) during the first two years following its launch by MiMedx Group, Inc.

We may assess additional strategic partnerships with medical device companies whereby we may enter into distribution, product development and/or licensing agreements for additional products complimentary to, or related to, existing and future products in our distribution channel, which could result in the payment by us of single digit percentage royalties or other product acquisition costs.

We have a broad portfolio of intellectual property protecting our products that we believe, when combined with the proprietary manufacturing processes associated with our products and our know-how, provides significant barriers to entry. Our intellectual property applies to our differentiated product construction and materials. In addition, we believe our exclusive manufacturing and long-term supply and license agreement with Aroa, or the Aroa License, creates a competitive advantage by allowing us to secure an exclusive supply of ovine rumen at a low cost. Ovine rumen, the forestomach of a sheep, is the source of the biologic material used in both of our OviTex and OviTex PRS products. We use biologic material from ovine rumen because of its plentiful supply, optimal biomechanical profile and open collagen architecture that allows for rapid cellular infiltration. Our OviTex and OviTex PRS products are manufactured by Aroa at their FDA registered and ISO 13485 compliant facility in Auckland, New Zealand. We purchase product from Aroa at a fixed transfer cost as a percentage of Aroa's cost of goods sold, and subject to a true-up adjustment, resulting in an amount equal to 27% of our net sales of our OviTex and OviTex PRS products, with the exception of OviTex IHR product configurations, for which we pay the greater of the initial fixed transfer cost or 27% of our net sales of OviTex IHR. This revenue sharing arrangement allows us to competitively price our products and pass along cost-savings to our customers.

We primarily market our products through a single direct sales force, predominantly in the U.S., with a small number of sales representatives in the United Kingdom and European Union, and also utilize a smaller number of independent contractors and distributors in the U.S. and certain European countries. We have invested in our direct sales and marketing infrastructure to expand our presence and to promote awareness and adoption of our products. As of September 30, 2025, we had 79 sales territories in the U.S. and 19 sales territories in Europe. We believe we can enhance the productivity of our sales force by improving customer segmentation and targeting, implementing and further refining our proprietary training programs, leveraging support from our medical education and medical affairs functions to drive physician awareness, education and clinical understanding of our products, and utilizing engagement analytics to support further product development and enhancement opportunities. Additionally, we have contracted with three national group purchasing organizations, or GPOs, in the U.S. covering our OviTex and OviTex PRS products and plan to continue to contract with additional GPOs and other integrated delivery networks, or IDNs, to increase access to and penetration of hospital accounts for all products we commercialize.

We are currently devoting research and development resources to develop additional variations of our OviTex and OviTex PRS products, including the development of OviTex configurations with longer-acting resorbable polymers and other potential product and packaging enhancements to extend the shelf life of our products. In addition, we also continue to explore the development of lower-cost, higher-margin resorbable polymer-based devices targeting our current indications. We are also exploring additional technologies that may complement our existing products, or expand the number of our products, in each case within the hernia, plastic and reconstruction, and broader soft-tissue reconstruction market. We intend to continue to make investments in research and development efforts to develop improvements and enhancements to our product portfolio.

Corporate Information

We were incorporated on April 17, 2012. Our primary executive offices are located at 1 Great Valley Parkway, Suite 24, Malvern, Pennsylvania 19355 and our telephone number is (484) 320-2930. Our website address is www.telabio.com. The information contained on, or accessible through, our website is not incorporated by reference into this prospectus, and you should not consider any information contained in, or that can be accessed through, our website as part of this prospectus or in deciding whether to purchase our common stock.

Implications of Being a Smaller Reporting Company

We are a "smaller reporting company" as defined in the Securities Exchange Act of 1934, as amended, or the Exchange Act. We may take advantage of certain of the scaled disclosures available to smaller reporting

companies until the fiscal year following the determination that our voting and non-voting common stock held by non-affiliates is more than \$250 million measured on the last business day of our second fiscal quarter, or our annual revenues are less than \$100 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is more than \$700 million measured on the last business day of our second fiscal quarter.

THE OFFERING

Shares of common stock that may be offered by the selling stockholder	Up to 2,000,000 shares of our common stock.
Terms of the offering	The selling stockholder, including its permitted transferees, donees, pledgees, assignees or successors-in-interest, may sell, transfer or otherwise dispose of any or all of the Shares offered by this prospectus from time to time on The Nasdaq Global Market or any other stock exchange, market or trading facility on which the Shares are traded or in private transactions. The Shares may be sold at fixed prices, at prevailing market prices, at prices related to prevailing market prices, at negotiated prices and/or at varying prices determined at the time of sale. See “Plan of Distribution” on page 17 .
Use of proceeds	We will not receive any proceeds from the sale of the Shares by the selling stockholder in this offering. See “Use of Proceeds.” To the extent the Warrant is exercised on a cash basis, if at all, we will receive proceeds from the exercise of the Warrant. We currently intend to use these proceeds, if any, for general corporate purposes, including but not limited to sales and marketing, research and development activities, general and administrative matters, working capital and capital expenditures. See “Use of Proceeds” on page 11 of this prospectus for more information.
Risk factors	See the section under the heading “Risk Factors” in this prospectus and the other information included in, or incorporated by reference into, this prospectus or any prospectus supplement for a discussion of certain factors you should carefully consider before deciding to invest in shares of our common stock.
Nasdaq Global Market symbol	“TELA”

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before making a decision to invest in our common stock, in addition to carefully considering the other information contained in this prospectus, any post-effective amendment, or any applicable prospectus supplement and incorporated by reference herein or therein, you should carefully consider the risks described under the caption “Risk Factors” contained in the applicable post-effective amendment or any applicable prospectus supplement and the risks discussed under the caption “Risk Factors” contained in our most recent [Annual Report on Form 10-K for the year ended December 31, 2024](#) and our subsequent Quarterly Reports on Form 10-Q, as well as any amendments thereto, which are incorporated by reference into this prospectus or the applicable post-effective amendment or any prospectus supplement in their entirety, together with other information in this prospectus, any post-effective amendment, or any applicable prospectus supplement, and the documents incorporated by reference therein. See “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

Future sales of our common stock by the selling stockholder could cause our stock price to decline.

Sales of a substantial number of shares of our common stock by the selling stockholder in the public market, or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities or other securities convertible into or exchangeable for equity securities, regardless of whether there is any relationship between such sales and the performance of our business. We cannot predict if and when the selling stockholder may sell such Shares in the public markets.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any applicable prospectus supplement and the documents incorporated by reference herein and therein may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Exchange Act, about us and our subsidiaries. These forward-looking statements are intended to be covered by the safe harbor for forward-looking statements provided by the Private Securities Litigation Reform Act of 1995. Forward-looking statements are not statements of historical fact, and can be identified by the use of forward-looking terminology such as “believes,” “expects,” “may,” “will,” “could,” “should,” “projects,” “plans,” “goal,” “targets,” “potential,” “estimates,” “seeks,” “intends” or “anticipates” or the negative thereof or comparable terminology. Forward-looking statements include, but are not limited to, statements concerning:

- estimates regarding future results of operations, financial position, research and development costs, capital requirements and our needs for additional financing;
- the commercial success and degree of market acceptance of our products;
- the introduction of new products or product enhancements by us or others in our industry, including new products which may be perceived to negatively impact the demand for our products now or in the future;
- our ability to expand, manage and maintain our direct sales and marketing organization and to market and sell our products in the United States, or U.S., and Europe;
- the performance of our exclusive contract manufacturer for our OviTex and OviTex PRS products, Aroa, in connection with the supply of product and in the development of additional products and product configurations within these products;
- our ability to maintain our supply chain integrity and expand our supply chain to manage increased demand for our products;
- our ability to compete successfully with larger competitors in our highly competitive industry;
- our ability to achieve and maintain adequate levels of coverage or reimbursement for our current products and any future products we may seek to commercialize;
- our ability to enhance our products, expand our indications and develop and commercialize additional products;
- the development, regulatory approval, efficacy and commercialization of competing products;
- our business model and strategic plans for our products, technologies and business, including our implementation thereof;
- the size of the markets for our current and future products;
- our ability to recruit and retain senior management and other highly qualified personnel;
- our ability to obtain additional capital to finance our planned operations;
- our ability to maintain regulatory approval for our products;
- our ability to commercialize or obtain regulatory approvals for our future products, or the effect of delays in commercializing or obtaining regulatory approvals;
- decreasing selling prices and pricing pressures;
- regulatory developments in the U.S., including regulatory developments due to changes in the U.S. presidential administration and European markets;
- the potential impact of healthcare reform in the U.S., including the Inflation Reduction Act of 2022, and measures being taken worldwide designed to reduce healthcare costs;
- any decrease in frequency of surgical procedures using our products, whether through outbreak of illness or disease, cybersecurity events impacting hospital operations, potential hospital closures, labor

and hospital staffing shortages, supply chain disruptions to critical surgical and hospital supplies, and any applicable adverse healthcare economic factors;

- the volatility of capital markets and other adverse macroeconomic factors, including due to inflationary pressures, interest rate and currency rate fluctuations, economic slowdown or recession, banking instability, monetary policy changes, changes in trade policies (including tariffs and trade protection measures that have been or may in the future be imposed by the U.S. or other countries), geopolitical tensions or the outbreak of hostilities or war, including from the ongoing Russia-Ukraine conflict, the current conflicts in the Middle East (including any escalation or expansion) and increasing tensions between China and Taiwan;
- our ability to develop and maintain our corporate infrastructure, including our internal controls;
- our ability to establish and maintain intellectual property protection for our products, as well as our ability to operate our business without infringing the intellectual property rights of others;
- the occurrence of adverse safety events, restrictions on use with our products or product liability claims;
- our anticipated use of proceeds from any financing activity; and
- other risks and uncertainties, including those listed under the caption “Risk Factors” in our [Annual Report on Form 10-K for the year ended December 31, 2024](#) and the other documents we file with the Securities and Exchange Commission, or the SEC.

You should read this prospectus, any post-effective amendment, or any applicable prospectus supplement, and the documents incorporated by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we currently expect. Our business and operations are and will be subject to a variety of risks, uncertainties and other factors. Consequently, actual results and experience may materially differ from those contained in any forward-looking statements. Such risks, uncertainties and other factors that could cause actual results and experience to differ from those projected include, but are not limited to, the risk factors discussed under the heading “Risk Factors” contained in this prospectus, any post-effective amendment, or any applicable prospectus supplement, and under similar headings in the other documents that are incorporated by reference into this prospectus.

You should assume that the information appearing in this prospectus, any post-effective amendment, or any applicable prospectus supplement and any document incorporated herein by reference is accurate as of its date only. Because the risk factors referred to above could cause actual results or outcomes to differ materially from those expressed in any forward-looking statements made by us or on our behalf, you should not place undue reliance on any forward-looking statements. Further, any forward-looking statement speaks only as of the date on which it is made. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor 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. Unless legally required, we do not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

We will not receive any proceeds from the sale of the Shares covered by this prospectus. All proceeds from the sale of the Shares will be for the account of the selling stockholder named herein. We will bear all other costs, fees and expenses incurred in effecting the registration of the Shares covered by this prospectus, including, without limitation, all registration and filing fees, Nasdaq listing fees and fees and expenses of our counsel and our accountants, in accordance with the terms of the Warrant. The selling stockholder will pay any discounts, commissions, and fees of underwriters, selling brokers, dealer managers or similar securities industry professionals incurred by such selling stockholder in disposing of the Shares covered by this prospectus.

The holder of the Warrant is not obligated to exercise the Warrant, and we cannot predict whether the holder of the Warrant will choose to exercise the Warrant. We may receive proceeds from any cash exercise of the Warrant. We currently intend to use such proceeds, if any, for general corporate purposes, including but not limited to sales and marketing, research and development activities, general and administrative matters, working capital and capital expenditures.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock is not complete and may not contain all the information you should consider before investing in our capital stock. This description is summarized from, and qualified in its entirety by reference to, our certificate of incorporation, which has been publicly filed with the SEC. See "Where You Can Find More Information." For a complete description, you should refer to our Fourth Amended and Restated Certificate of Incorporation, as amended, or Certificate of Incorporation, and Third Amended and Restated Bylaws, or Bylaws, copies of which are incorporated by reference as exhibits to the registration statement of which this prospectus is a part.

General

Our authorized capital stock consists of 200,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share. All of our outstanding shares of common stock are fully paid and nonassessable.

Common Stock

Voting Rights

Each holder of our common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our stockholders do not have cumulative voting rights in the election of directors. Accordingly, holders of a majority of the voting shares are able to elect all of the directors. In addition, the affirmative vote of holders of 66 ²/₃% of the voting power of all of the then outstanding voting stock is required to take certain actions, including amending certain provisions of our Certificate of Incorporation, such as the provisions relating to amending our Bylaws, procedures for our stockholder meetings, the classified board, director liability, and exclusive forum for proceedings.

Dividends

Subject to preferences that may be applicable to any then outstanding preferred stock, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of preferred stock.

Rights and Preferences

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

Listing

Our common stock is listed on the Nasdaq Global Market under the symbol "TELA."

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Preferred Stock

Our board of directors is authorized to direct us to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights,

preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third-party to acquire, or could discourage a third-party from seeking to acquire, a majority of our outstanding voting stock.

Warrants

We have warrants to purchase an aggregate of 88,556 shares of our common stock outstanding with an exercise price of \$28.65 per share. These warrants may be exercised at any time and from time to time, in whole or in part.

Anti-Takeover Provisions of Delaware Law and Our Charter Documents

Our Certificate of Incorporation and our Bylaws contain provisions that could make the following transactions more difficult: acquisition of us by means of a tender offer; acquisition of us by means of a proxy contest or otherwise; or removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the market price for our shares.

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

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the General Corporation Law of the State of Delaware, or the DGCL, which prohibits persons deemed “interested stockholders” from engaging in a “business combination” with a publicly-held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an “interested stockholder” is a person who, together with affiliates and associates (entities controlled by the stockholder, trusts, certain relatives, and entities over which the person has control), owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation’s voting stock. Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the market price of our common stock.

Elimination of Stockholder Action by Written Consent

Our Certificate of Incorporation provides that all stockholder actions must be effected at a duly called meeting of stockholders and not by consent in writing. A special meeting of stockholders may be called only by a majority of our board of directors, the chair of our board of directors, or our chief executive officer.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Amendment of Charter Provisions

Our Certificate of Incorporation provides that the affirmative vote of holders of at least 66 2/3% of the voting power of all of the then outstanding shares of voting stock, voting as a single class, are required to amend certain provisions of our Certificate of Incorporation, including provisions relating to the size of the board, removal of directors, special meetings, actions by written consent and cumulative voting. The affirmative vote of holders of at least 66 2/3% of the voting power of all of the then outstanding shares of voting stock, voting as a single class, are required to amend or repeal our Bylaws, although our Bylaws may be amended by a simple majority vote of our board of directors.

Classified Board; Election and Removal of Directors

Our Certificate of Incorporation provides that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms, and gives our board of directors the exclusive right to expand the size of our board of directors and to elect directors to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director.

Choice of Forum

Our Certificate of Incorporation provides that, unless our board of directors consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the United States District Court for the District of Delaware) is the sole and exclusive forum for: (i) any derivative action or proceeding brought on behalf of us; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees or agents to us or our stockholders; (iii) any action asserting a claim against us arising pursuant to any provision of the DGCL or our Certificate of Incorporation and our Bylaws; or (iv) any action asserting a claim against us governed by the internal affairs doctrine, except, in each case, (A) any claim as to which such court determines that there is an indispensable party not subject to the jurisdiction of such court (and the indispensable party does not consent to the personal jurisdiction of such court within 10 days following such determination), (B) which is vested in the exclusive jurisdiction of a court or forum other than such court, or (C) for which such court does not have subject matter jurisdiction.

Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the exclusive forum provision will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. In addition, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. As a result, the exclusive forum provision will not apply to suits brought to enforce any duty or liability created by the Securities Act or any other claim for which the federal and state courts have concurrent jurisdiction.

SELLING STOCKHOLDER

This prospectus covers the resale from time to time of up to 2,000,000 Shares issuable upon exercise of the Warrant issued to Perceptive in connection with that certain Credit Agreement by and between us and Perceptive.

The selling stockholder may offer and sell, from time to time, any of the Shares described under the column “Number of Shares Being Offered Hereby” in the table below. Except for the ownership of the securities and the Credit and Security Agreements described above, the selling stockholder has not had any material relationship with us within the past three years.

As used in this prospectus, the term “selling stockholder” includes the selling stockholder listed in the table below, together with any additional selling stockholders listed in a subsequent amendment to this prospectus, and their donees, pledgees, assignees, transferees, distributees and successors-in-interest that receive shares in any non-sale transfer after the date of this prospectus.

The table below lists the selling stockholder and other information regarding the beneficial ownership of the shares by the selling stockholder as of December 9, 2025. The following table also provides the number of Shares that may be sold by the selling stockholder under this prospectus and that the selling stockholder will beneficially own assuming all the Shares that may be offered pursuant to this prospectus are sold. The number of shares described under the column “Shares of Common Stock Beneficially Owned Before this Offering” for the selling stockholder includes all shares of our common stock beneficially held by the selling stockholder as of December 9, 2025, which includes shares of common stock issuable upon the exercise of the Warrant. There is a limitation on the aggregate number of shares of common stock beneficially owned by the selling stockholder set forth in the Warrant, or the Beneficial Ownership Limitation, due to which the Warrant may not be exercised if the aggregate number of shares of common stock beneficially owned by the selling stockholder immediately following such exercise would exceed 9.99%. Because the selling stockholder may dispose of all, none or some portion of their Shares, no estimate can be given as to the number of Shares that will be beneficially owned by the selling stockholder upon termination of this offering.

For purposes of the table below, however, we have assumed that after termination of this offering none of the Shares covered by this prospectus will be beneficially owned by the selling stockholder and further assumed that the selling stockholder will not acquire beneficial ownership of any additional Shares during the offering. In addition, the selling stockholder may have sold, transferred or otherwise disposed of, or may sell, transfer or otherwise dispose of, at any time and from time to time, the Shares in transactions exempt from the registration requirements of the Securities Act after the date on which the information in the table is presented. See the section titled “Plan of Distribution.”

SELLING STOCKHOLDER ⁽¹⁾	SHARES OF COMMON STOCK BENEFICIALLY OWNED BEFORE THIS OFFERING ⁽²⁾	NUMBER OF SHARES BEING OFFERED HEREBY ⁽³⁾	SHARES BENEFICIALLY OWNED AFTER THE OFFERING ⁽⁴⁾	
			NUMBER OF SHARES	PERCENTAGE
Perceptive Credit Holdings V, LP	2,000,000	2,000,000	—	—%

- (1) All information regarding the selling stockholder was provided by the selling stockholder as of December 9, 2025. Perceptive Credit Advisors, LLC, or Perceptive Credit, is the investment manager to Perceptive, and accordingly, may be deemed to beneficially own the securities directly held by Perceptive. Perceptive Advisors LLC is the general partner of Perceptive Credit, Joseph Edelman is the managing member of Perceptive Advisors LLC, and accordingly, Perceptive Advisors LLC or Mr. Edelman may be deemed to beneficially own the securities held by the Perceptive. Perceptive Credit, Perceptive Advisors LLC and Mr. Edelman disclaim beneficial ownership of such shares except to the extent of its or his pecuniary interest therein. The principal business address and address for notice of Perceptive is 51 Astor Place, 10th Floor, New York, New York 10003.
- (2) The shares reported under “Shares of Common Stock Beneficially Owned Before this Offering” includes 2,000,000 shares of common stock underlying the Warrant held by Perceptive.

- (3) The number of shares of common stock in the column “Number of Shares Being Offered Hereby” represents all of the Shares that the selling stockholder may offer and sell from time to time under this prospectus, consisting of all of the Shares of common stock issuable upon the exercise of the Warrant, without giving effect to the Beneficial Ownership Limitation.
- (4) The selling stockholder has not informed us, and we do not know, when or in what amounts the selling stockholder may offer for sale the Shares pursuant to this offering. For purposes of this table, we have assumed that the selling stockholder will have sold all of the Shares covered by this prospectus upon the completion of this offering.

PLAN OF DISTRIBUTION

The selling stockholder, including its pledgees, donees, transferees, distributees, beneficiaries or other successors in interest, may from time to time offer some or all of the Shares by this prospectus. We will not receive any of the proceeds from the sale of the Shares covered by this prospectus by the selling stockholder. The selling stockholder will act independently of us in making decisions with respect to the timing, manner and size of each sale. We will bear all fees and expenses incident to our obligation to register the Shares covered by this prospectus.

The selling stockholder may sell all or a portion of the Shares beneficially owned by it and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the Shares are sold through underwriters or broker-dealers, the selling stockholder will be responsible for underwriting discounts or commissions or agent's commissions in connection with the Shares held by such selling stockholder. The Shares may be sold on any national securities exchange or quotation service on which the Shares may be listed or quoted at the time of sale, in the over-the-counter market or in transactions otherwise than on these exchanges or systems or in the over-the-counter market and in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at privately negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions.

The selling stockholder may use any one or more of the following methods when disposing of Shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the Shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an over-the-counter distribution;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales effected after the effective date of the registration statement of which this prospectus is a part;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- in "at the market" offerings, as defined in Rule 415 under the Securities Act, at negotiated prices, at prices prevailing at the time of sale or prices related to such prevailing market prices, including sales made directly on a national securities exchange or sales made through a market maker other than on an exchange or other similar offerings through sales agents;
- through trading plans entered into by the selling stockholder pursuant to Rule 10b5-1 under the Exchange Act, that are in place at the time of an offering pursuant to this prospectus and any applicable prospectus supplement hereto that provide for periodic sales of their securities on the basis of parameters described in such trading plans;
- through firm-commitment underwritten public offerings;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholder may, from time to time, pledge or grant a security interest in some or all of the Shares owned and, if the selling stockholder defaults in the performance of its secured obligations, the pledgees or secured parties may offer and sell the Shares, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of the selling stockholder to include the pledgee, transferee, or other successors in interest as the selling stockholder under this prospectus. The selling stockholder also may transfer the Shares in

other circumstances, in which case the transferees, pledgees or other successors in interest will be the beneficial owners for purposes of this prospectus.

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

Broker-dealers engaged by the selling stockholder may arrange for other broker-dealers to participate in sales. If the selling stockholder effects certain transactions by selling Shares to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from such selling stockholder or commissions from purchasers of the Shares for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with applicable rules of the Financial Industry Regulatory Authority, or FINRA, and in the case of a principal transaction, a markup or markdown in compliance with applicable FINRA rules.

The aggregate proceeds to the selling stockholder from the sale of the Shares offered will be the purchase price of the Shares less discounts or commissions, if any. The selling stockholder reserves the right to accept and, together with its respective agents from time to time, to reject, in whole or in part, any proposed purchase of Shares to be made directly or through agents. The selling stockholder also may resell all or a portion of the Shares in open market transactions in reliance upon Rule 144 under the Securities Act, rather than under this prospectus, provided that each meets the criteria and conforms to the requirements of that rule.

The selling stockholder and any underwriters, broker-dealers or agents that participate in the sale of the Shares, or interests therein, may be deemed to be "underwriters" within the meaning of Section 2(a)(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the Shares may be underwriting discounts and commissions under the Securities Act. If selling securities pursuant to this prospectus, the selling stockholder is subject to the prospectus delivery requirements of the Securities Act.

To the extent required pursuant to Rule 424(b) under the Securities Act, the Shares to be sold, the name of the selling stockholder, the purchase price and public offering price, the names of any agents, dealer or underwriter, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the Shares may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the Shares may not be sold unless they have been registered or qualified for sale, or an exemption from registration or qualification requirements is available and the selling stockholder complies with such exemption's requirements.

The selling stockholder and any other person participating in a sale of the Shares registered under this prospectus will be subject to applicable provisions of the Exchange Act, and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the Shares by the selling stockholder and any other participating person.

All of the foregoing may affect the marketability of the Shares and the ability of any person or entity to engage in market-making activities with respect to the Shares. In addition, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholder for

the purpose of satisfying the prospectus delivery requirements of the Securities Act. We have agreed to indemnify the selling stockholder against certain liabilities, including certain liabilities under the Securities Act, the Exchange Act or other federal or state law. We and the selling stockholder may indemnify any broker-dealer that participates in transactions involving the sale of the Shares against certain liabilities, including liabilities arising under the Securities Act.

LEGAL MATTERS

The validity of the shares of common stock being offered hereby will be passed upon for us by Goodwin Procter LLP, Philadelphia, Pennsylvania.

EXPERTS

The consolidated financial statements of TELA Bio, Inc. as of December 31, 2024 and 2023, and for each of the years in the three-year period ended December 31, 2024, have been incorporated by reference herein and in the registration statement in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are currently subject to the reporting requirements of the Exchange Act, and in accordance therewith file periodic reports, proxy statements and other information with the SEC. Our SEC filings are available to you on the SEC's website at <http://www.sec.gov> and in the "Investors" section of our website at www.telabio.com. Our website and the information contained on that site, or connected to that site, are not incorporated into and are not a part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below 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 March 21, 2025](#);
- Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2025, June 30, 2025 and September 30, 2025, filed with the SEC on [May 8, 2025](#), [August 11, 2025](#) and [November 14, 2025](#), respectively;
- The information specifically incorporated by reference into our [Annual Report on Form 10-K for the year ended December 31, 2024](#) from our [Definitive Proxy Statement on Schedule 14A, filed on April 17, 2025](#);
- Our Current Reports on Form 8-K filed with the SEC on [March 31, 2025](#), [May 30, 2025](#), [June 2, 2025](#), [October 9, 2025](#), [November 3, 2025](#) and [November 14, 2025](#) (in each case other than any portions thereof deemed furnished and not filed); and
- The description of our common stock contained in our registration statement on [Form 8-A \(File No. 001-39130\) filed with the SEC on November 7, 2019](#), under the Exchange Act, including any amendment or report filed for the purpose of updating such description.

We also incorporate by reference any future filings (other than any filings or portions of such reports that are not deemed "filed" under the Exchange Act in accordance with the Exchange Act and applicable SEC rules, including current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits furnished on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, until we file a post-effective amendment that indicates the termination of the offering of the securities made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference in this prospectus, including exhibits to these documents. Written or oral requests for copies should be directed to TELA Bio, Inc., Attn: Corporate Secretary, 1 Great Valley Parkway, Suite 24, Malvern, Pennsylvania 19355, telephone number (484) 320-2930.



Up to 2,000,000 Shares of Common Stock

Prospectus

, 2025

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following is an estimate of the expenses (all of which are to be paid by the registrant) that we may incur in connection with the issuance and distribution of the shares of common stock being registered by this registration statement. None of the expenses listed below are to be borne by the selling stockholder named in the prospectus that forms a part of this registration statement. All the amounts shown are estimates, except for the SEC registration fee.

SEC registration fee	\$ 317.63
Legal fees and expenses	\$50,000.00
Accounting fees and expenses	\$25,000.00
Printing expenses	\$ 5,000.00
Total	\$80,317.63

Item 15. Indemnification of Directors and Officers.

The registrant is governed by the DGCL. Section 145 of the DGCL provides that a corporation may indemnify any person, including an officer or director, who was or is, or is threatened to be made, a party to any threatened, pending or completed legal action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation), by reason of the fact that such person was or is an officer, director, employee or agent of such corporation or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided such officer, director, employee or agent acted in good faith and in a manner such person reasonably believed to be in, or not opposed to, the corporation's best interest and, for criminal actions or proceedings, had no reasonable cause to believe that such person's conduct was unlawful. A Delaware corporation may indemnify any person, including an officer or director, who was or is, or is threatened to be made, a party to any threatened, pending or contemplated action or suit by or in the right of such corporation, under the same conditions, except that such indemnification is limited to expenses (including attorneys' fees) actually and reasonably incurred by such person, and except that no indemnification is permitted without judicial approval if such person is adjudged to be liable to such corporation. Where an officer or director of a corporation is successful, on the merits or otherwise, in the defense of any action, suit or proceeding referred to above, or any claim, issue or matter therein, the corporation must indemnify that person against the expenses (including attorneys' fees) which such officer or director actually and reasonably incurred in connection therewith.

The registrant's Bylaws authorize the indemnification of its officers and directors, consistent with Section 145 of the DGCL.

Reference is made to Section 102(b)(7) of the DGCL, which enables a corporation in its original certificate of incorporation or an amendment thereto to eliminate or limit the personal liability of a director or officer for violations of the director's or officers' fiduciary duty, except (i) for any breach of the director's or officers' duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) pursuant to Section 174 of the DGCL, which provides for liability of directors for unlawful payments of dividends or unlawful stock purchase or redemptions, (iv) for any transaction from which a director or officer derived an improper personal benefit or (v) an officer in any action by or in right of the corporation.

The registrant's Certificate of Incorporation includes such a provision, consistent with Section 102(b)(7) of the DGCL.

We have entered or intend to enter into indemnification agreements with each of our directors and officers. These indemnification agreements may require us, among other things, to indemnify our directors

and officers for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or officer in any action or proceeding arising out of his or her service as one of our directors or officers, or our subsidiaries or any other company or enterprise to which the person provides services at our request.

We maintain 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.

In any underwriting agreement we enter into in connection with the sale of securities being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us within the meaning of the Securities Act against certain liabilities.

Item 16. Exhibits.

(a) *Exhibits*

EXHIBIT INDEX

Exhibit Number	Description of Exhibit
3.1	Fourth Amended and Restated Certificate of Incorporation of TELA Bio, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-39130) filed on November 19, 2019).
3.2	Certificate of Amendment to TELA Bio, Inc.'s Fourth Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-39130) filed on August 11, 2025).
3.3	Third Amended and Restated Bylaws of TELA Bio, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-39130) filed on November 13, 2023).
4.1	Specimen Common Stock Certificate of TELA Bio, Inc. (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-1/A (File No. 333-234217), dated October 29, 2019).
4.2	Amended and Restated Investors' Rights Agreement (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-1 (File No. 333-234217), dated October 15, 2019).
4.3	Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 the Company Current Report on Form 8-K (File No. 001-39130) filed on November 14, 2025).
5.1	Opinion of Goodwin Procter LLP (filed herewith).
10.1*#	Credit Agreement and Guaranty dated as of November 13, 2025, by and among TELA Bio, Inc., Perceptive Credit Holdings V, L.P. as lender and administrative agent (incorporated by reference to Exhibit 10.1 the Company Current Report on Form 8-K (File No. 001-39130) filed on November 14, 2025).
10.2*	Security Agreement, dated as of November 13, 2025, by and among the Company and Perceptive Credit Holdings V, L.P. (incorporated by reference to Exhibit 10.2 the Company Current Report on Form 8-K (File No. 001-39130) filed on November 14, 2025).
23.1	Consent of KPMG LLP, independent registered public accounting firm (filed herewith).
23.2	Consent of Goodwin Procter LLP (included in Exhibit 5.1).
24.1	Powers of Attorney (incorporated by reference to the signature page hereto).
107	Filing Fee Table (filed herewith).

* Schedules and exhibits have been omitted pursuant to Item 601(a)(5) of Regulation S-K. The Company undertakes to furnish supplemental copies of any of the omitted schedules upon request by the U.S. Securities and Exchange Commission.

- # Confidential information has been omitted because it is both (i) not material and (ii) is the type of information that the Company treats as private or confidential pursuant to Item 601 of Regulation S-K.

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 the 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 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement; *provided, however*, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section 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 Exchange Act that are incorporated by reference in the registration statement or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.
 - (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
 - (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
 - (4) That, for the purpose of determining liability under the Securities Act to any purchaser:
 - (i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a

purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) 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 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 SEC such indemnification is against public policy as expressed in the Securities 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 Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Borough of Malvern, Commonwealth of Pennsylvania, on the 12th day of December, 2025.

TELA Bio, Inc.

By: /s/ Antony Koblisch

Name: Antony Koblisch
Title: Chief Executive Officer and Director

POWER OF ATTORNEY

We, the undersigned officers and directors of TELA Bio, Inc., hereby severally constitute and appoint each of Antony Koblisch and Roberto Cuca, our true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution in her or him for her or him and in her or his name, place and stead, and in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as she or he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or her or his 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>
<u>/s/ Antony Koblisch</u> Antony Koblisch	Chief Executive Officer and Director (Principal Executive Officer)	December 12, 2025
<u>/s/ Roberto Cuca</u> Roberto Cuca	Chief Operating Officer and Chief Financial Officer (Principal Financial Officer)	December 12, 2025
<u>/s/ Megan Smeykal</u> Megan Smeykal	Chief Accounting Officer and Controller (Principal Accounting Officer)	December 12, 2025
<u>/s/ Doug Evans</u> Doug Evans	Chairman, Board of Directors	December 12, 2025
<u>/s/ Kurt Azarbarzin</u> Kurt Azarbarzin	Director	December 12, 2025
<u>/s/ Vince Burgess</u> Vince Burgess	Director	December 12, 2025

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Federica O'Brien</u> Federica O'Brien	Director	December 12, 2025
<u>/s/ William Plovanic</u> William Plovanic	Director	December 12, 2025
<u>/s/ Betty Jo Rocchio</u> Betty Jo Rocchio	Director	December 12, 2025

Goodwin Procter LLP
3025 John F Kennedy Blvd
Philadelphia, PA 19104
goodwinlaw.com
+1 (445) 207-7800

December 12, 2025

TELA Bio, Inc.
1 Great Valley Parkway, Suite 24
Malvern, Pennsylvania 19355

Re: Securities Registered under Registration Statement on Form S-3

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-3 (as amended or supplemented, the "Registration Statement"), filed on December 12, 2025, with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration of the offering by TELA Bio, Inc., a Delaware corporation (the "Company"), of up to 2,000,000 shares (the "Shares") of the Company's common stock, par value \$0.001 per share ("Common Stock"), to be sold by the selling stockholder listed in the Registration Statement under "Selling Stockholder" (the "Selling Stockholder"). The Shares are issuable upon the exercise of an outstanding warrant to purchase shares of the Company's Common Stock, which was originally issued by the Company in connection with that certain Credit Agreement and Guaranty dated as of November 13, 2025, by and between the Company and Perceptive Credit Holdings V, LP as lender and administrative agent (the "Warrant").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinions set forth below, on certificates of officers of the Company. For purposes of the opinion set forth below, we have assumed that before the Shares are issued, the Company does not issue shares of Common Stock or reduce the total number of shares of Common Stock the Company is authorized to issue under its certificate of incorporation such that the number of unissued shares of Common Stock authorized under the Company's certificate of incorporation is less than the number of Shares.

The opinion set forth below is limited to the Delaware General Corporation Law.

Based on the foregoing, we are of the opinion that, assuming the Shares were issued today in accordance with the terms of the Warrant, they would be validly issued, fully paid and nonassessable.

The opinion expressed above is subject to bankruptcy, insolvency, fraudulent transfers, reorganization, moratorium and other similar laws of general application affecting the rights and remedies of creditors and to general principles of equity.

This opinion letter and the opinion it contains shall be interpreted in accordance with the Core Opinion Principles as published in 74 *Business Lawyer* 815 (Summer 2019).

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP

GOODWIN PROCTER LLP



KPMG LLP
Suite 4000
1735 Market Street
Philadelphia, PA 19103-7501

Consent of Independent Registered Public Accounting Firm

We consent to the use of our report dated March 21, 2025, with respect to the consolidated financial statements of TELA Bio, Inc., incorporated herein by reference, and to the reference to our firm under the heading "Experts" in the prospectus.

/s/ KPMG LLP

Philadelphia, Pennsylvania
December 12, 2025

KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee.

Calculation of Filing Fee Tables

S-3

TELA Bio, Inc.

Table 1: Newly Registered and Carry Forward Securities

Not Applicable

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee	Carry Forward Form Type	Carry Forward File Number	Carry Forward Initial Effective Date	Filing Fee Previously Paid in Connection with Unsold Securities to be Carried Forward
Newly Registered Securities												
Fees to be Paid	1 Equity	Common Stock, par value \$0.001 per share	457(a)	2,000,000	\$ 1.15	2,300,000.00	0.0001381	\$ 317.63				
Fees Previously Paid												
Carry Forward Securities												
Carry Forward Securities												
Total Offering Amounts:						\$		\$ 317.63				
Total Fees Previously Paid:								\$ 0.00				
Total Fee Offsets:								\$ 0.00				
Net Fee Due:								\$ 317.63				

Offering Note

1

Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the "Securities Act"), this registration statement also covers such additional shares of TELA Bio, Inc.'s (the "Registrant") common stock, par value \$0.001 per share (the "Common Stock") as may be issuable with respect to the shares being registered hereunder to prevent dilution resulting from stock splits, stock dividends, recapitalizations or certain other capital adjustments.

Consists of shares of the Registrant's Common Stock issuable to the selling stockholder upon exercise of an outstanding warrant to purchase Common Stock. Such shares of Common Stock will be offered for resale by the selling stockholder pursuant to the prospectus contained in the registration statement to which this exhibit is attached.

Estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(c) under the Securities Act. The price per share and aggregate offering price are based on the average of the high and low prices of the Registrant's Common Stock on December 8, 2025, as reported on The Nasdaq Global Market.

Table 2: Fee Offset Claims and Sources

Not Applicable

	Registrant or Filer Name	Form or Filing Type	File Number	Initial Filing Date	Filing Date	Fee Offset Claimed	Security Type Associated with Fee Offset Claimed	Security Title Associated with Fee Offset Claimed	Unsold Securities Associated with Fee Offset Claimed	Unsold Aggregate Offering Amount Associated with Fee Offset Claimed	Fee Paid with Fee Offset Source
Rules 457(b) and 0-11(a)(2)											
Fee Offset Claims	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fee Offset Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rule 457(p)											
Fee Offset Claims	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fee Offset Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 3: Combined Prospectuses

Not Applicable

Security Type	Security Class Title	Amount of	Maximum Aggregate	Form	File Number	Initial
---------------	----------------------	-----------	-------------------	------	-------------	---------

