

PROSPECTUS

Tempest Therapeutics, Inc.

8,910,579 Shares of Common Stock

This prospectus relates to the offer and sale from time to time of up to 8,910,579 shares of our common stock, par value \$0.001 per share (“common stock”), by Lincoln Park Capital Fund, LLC (“Lincoln Park” or the “Selling Stockholder”).

The shares included in this prospectus consist of shares of common stock that we have issued or that we may, in our discretion, elect to issue and sell to the Selling Stockholder, from time to time after the date of this prospectus and the date of the satisfaction of the conditions to the Selling Stockholder’s purchase obligations (the “Commencement Date”) as set forth in the common stock purchase agreement we entered into with Lincoln Park on August 13, 2026 (the “Purchase Agreement”). We are not selling any shares of common stock being offered by this prospectus and will not receive any of the proceeds from the sale of such shares by the Selling Stockholder. However, we may receive up to \$25 million aggregate gross proceeds (the “Initial Available Amount”) from sales of common stock to Lincoln Park under the Purchase Agreement and, upon our receipt of gross proceeds equal to the full Initial Available Amount from such sales, the total aggregate dollar amount that will be available to us under the Purchase Agreement will automatically increase by an additional \$25 million (such additional amount, the “Additional Available Amount”), and thereafter we may receive up to such Additional Available Amount (or up to a total of \$50 million aggregate gross proceeds (the “Total Available Amount”)) from sales of common stock to Lincoln Park under the Purchase Agreement. The shares registered pursuant to this prospectus also include (i) 560,356 shares of common stock that we issued to the Selling Stockholder concurrently with our execution of the Purchase Agreement, as consideration for its irrevocable commitment (the “Initial Commitment Shares”) to purchase shares of our common stock under the Purchase Agreement at our election in our sole discretion, from time to time after the date of this prospectus, upon the terms and subject to the satisfaction of the conditions set forth in the Purchase Agreement and (ii) 350,223 shares of common stock to be issued to the Selling Stockholder as additional consideration for its irrevocable commitment to purchase shares of our common stock under the Purchase Agreement, following our receipt of gross proceeds equal to the full Initial Available Amount from sales of common stock to Lincoln Park under the Purchase Agreement (the “Additional Commitment Shares,” and together with the Initial Commitment Shares, the “Commitment Shares”), pursuant to the terms of the Purchase Agreement. See the section titled “The Lincoln Park Transaction” for a description of the Purchase Agreement and the section titled “Selling Stockholder” for additional information regarding the Selling Stockholder.

The Selling Stockholder may sell or otherwise dispose of the common stock described in this prospectus in different ways and at varying prices. See “Plan of Distribution” for more information about how the Selling Stockholder may sell or otherwise dispose of the common stock being registered pursuant to this prospectus. The Selling Stockholder is an “underwriter” within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended (the “Securities Act”).

We will pay the expenses of registering under the Securities Act the offer and sale of the common stock to which this prospectus relates by the Selling Stockholder, including legal and accounting fees. See “Plan of Distribution.”

Our common stock is listed on the Nasdaq Capital Market under the symbol “TPST”. On August 28, 2026, the closing price of our common stock was \$1.06.

INVESTING IN OUR SECURITIES INVOLVES SIGNIFICANT RISKS THAT ARE DESCRIBED IN THE [“RISK FACTORS”](#) SECTION BEGINNING ON PAGE 6 OF THIS PROSPECTUS

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

The date of this prospectus is August 31, 2026.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission (“SEC”) under the Securities Act. Under this prospectus, the Selling Stockholder may, from time to time, sell shares of our common stock described in this prospectus in one or more transactions, as described herein. This prospectus provides you with a general description of the securities offered by the Selling Stockholder. Any prospectus supplement may also add, update or change information contained in this prospectus. Any statement that we make in this prospectus will be modified or superseded by any inconsistent statement made by us in a prospectus supplement.

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

The registration statement we filed with the SEC includes exhibits that provide more detail of the matters discussed in this prospectus. This prospectus contains 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 filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part. You should read this prospectus and the related exhibits filed with the SEC and any prospectus supplement, together with additional information described under the headings “Where You Can Find More Information” and “Incorporation by Reference” before making your investment decision.

You should rely only on the information incorporated by reference or provided in this prospectus, any prospectus supplement and the registration statement. Neither we nor the Selling Stockholder has authorized anyone else to provide you with different or additional information other than that contained in or incorporated by reference in this prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. Offers to sell, and solicitations of offers to buy, our common stock are being made only in jurisdictions where offers and sales are permitted. You should assume that the information in this prospectus and any prospectus supplement, or incorporated by reference, is accurate only as of the respective dates of those documents. Our business, financial condition, results of operations and prospects may have changed since those dates.

Throughout this prospectus, the terms “we,” “us,” “our,” and our “company” refer to Tempest Therapeutics, Inc. and its subsidiaries.

PROSPECTUS SUMMARY

This prospectus summary highlights selected information appearing elsewhere in this prospectus and in documents we file with the SEC that are incorporated by reference in this prospectus. Because it is a summary, it may not contain all of the information that may be important to you. To understand this offering fully, you should read this entire prospectus carefully, including the information incorporated by reference herein, the information set forth under the heading “Risk Factors” and our financial statements and the related notes thereto incorporated by reference in this prospectus.

Overview

We are a clinical-stage biotechnology company advancing a pipeline of advanced chimeric antigen receptor T-cell (“CAR-T”) product candidates, including our lead program, TPST-4003, a dual-targeting CD19/B-cell maturation antigen (“BCMA”) in vivo CAR-T product candidate, which we are developing for indications in immunology and oncology. In February 2026, we expanded our pipeline through a strategic transaction under which we acquired rights to a dual-targeting CAR-T platform, which included product candidates with the potential to treat certain blood cancers, solid tumors and immunology indications, including TPST-2003, an autologous CD19/BCMA CAR-T therapy currently in clinical development for relapsed or refractory multiple myeloma and the rare disease, POEMS syndrome.

Our mission is to develop therapeutic products with the potential to address high unmet medical needs by identifying promising clinical-stage candidates and advancing their development to create products that will improve patients’ lives.

Purchase Agreement with the Selling Stockholder

On August 13, 2026, we entered into the Purchase Agreement with Lincoln Park, pursuant to which Lincoln Park has agreed to purchase from us up to an aggregate of \$50,000,000 of our common stock (subject to certain limitations) from time to time over the term of the Purchase Agreement. Pursuant to the Purchase Agreement, we may receive aggregate gross proceeds up to the Initial Available Amount from sales of common stock to Lincoln Park and, upon our receipt of gross proceeds equal to the full Initial Available Amount from such sales, the total aggregate dollar amount that will be available to us under the Purchase Agreement will automatically increase by the Additional Available Amount, and thereafter we may receive up to such Additional Available Amount (or up to the Total Available Amount) from sales of common stock to Lincoln Park under the Purchase Agreement. In connection with the Purchase Agreement, we entered into a Registration Rights Agreement, dated August 13, 2026 (the “Registration Rights Agreement”), with the Selling Stockholder, pursuant to which we agreed to file with the SEC the registration statement of which this prospectus is a part to register for resale under the Securities Act, the shares of our common stock that have and may be issued to the Selling Stockholder under the Purchase Agreement.

The shares registered pursuant to this prospectus also include (i) 560,356 Initial Commitment Shares and (ii) 350,223 Additional Commitment Shares, pursuant to the terms of the Purchase Agreement.

We do not have the right to commence any sales of our common stock to the Selling Stockholder under the Purchase Agreement until certain conditions set forth in the Purchase Agreement, all of which are outside of the Selling Stockholder’s control, have been satisfied, including that the SEC has declared effective the registration statement of which this prospectus forms a part (the “Commencement Date”). Thereafter, we may, from time to time and at our sole discretion for a period that ends on the 24-month anniversary of the Commencement Date (the “Maturity Date”), on any business day that we select on which the closing sale price of our common stock equals or exceeds \$0.15 per share (subject to adjustment as set forth in the Purchase Agreement), direct the

Selling Stockholder to purchase up to 60,000 shares of our common stock, which amount may be increased depending on the market price of our common stock at the time of sale, subject to a maximum commitment of \$500,000 per purchase (each such purchase, a “Regular Purchase”). The maximum number of shares the Company may sell to the Selling Stockholder in a Regular Purchase may be increased by certain amounts to up to 70,000 shares and thereafter up to 80,000 shares, with the applicable maximum share limit determined by whether the closing sale price per share of common stock as reported on The Nasdaq Capital Market on the applicable purchase date for such Regular Purchase equals or exceeds certain minimum price thresholds set forth in the Purchase Agreement. In addition, the Selling Stockholder has committed to purchase other “accelerated purchase share amounts” or “additional accelerated purchase share amounts” under certain circumstances, as described in more detail in “The Lincoln Park Transaction.” We will control the timing and amount of any sales of our common stock to the Selling Stockholder under the Purchase Agreement. The purchase price of the shares of our common stock that may be sold to the Selling Stockholder in Regular Purchases under the Purchase Agreement will be based on the market price of our common stock at or preceding the time of sale as computed under the Purchase Agreement. The purchase price per share will be equitably adjusted as provided in the Purchase Agreement for any reorganization, recapitalization, non-cash dividend, stock split, or other similar transaction as set forth in the Purchase Agreement. Following the satisfaction of conditions for the commencement of sales under the Purchase Agreement, we may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business day’s notice. There are no restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement or the Registration Rights Agreement, other than a prohibition on our entering into any “equity line of credit” or “at-the-market offering” other than an at-the-market offering through one or more registered broker-dealer(s) acting as agent(s) or other similar offering until the earlier of (i) the 24-month anniversary of the Commencement Date and (ii) in the event the Company terminates the Purchase Agreement, the earlier of (A) the one-hundred-eightieth (180th) calendar day after the effective date of any termination of the Purchase Agreement and (B) the date on which Lincoln Park no longer owns any Securities (as defined in the Purchase Agreement). For additional information see “The Lincoln Park Transaction.”

Corporate Information

We were incorporated in Delaware in April 2011. Our principal executive offices are located at 2000 Sierra Point Parkway, Suite 400, Brisbane, CA 94005, and our telephone number is (415) 798-8589. Our website is located at <http://www.tempesttx.com>. We do not incorporate by reference into this prospectus the information on, or accessible through, our website, and you should not consider it as part of this prospectus.

The Tempest logo and other trademarks or service marks of Tempest Therapeutics, Inc. appearing in this prospectus are the property of Tempest Therapeutics, Inc. Other trademarks, service marks or trade names appearing in this prospectus are the property of their respective owners. We do not intend our use or display of other companies’ trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, these other companies.

THE OFFERING

Common Stock Offered by the Selling Stockholder

Up to 8,910,579 shares of our common stock, consisting of:

- 560,356 Initial Commitment Shares that we issued to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the Purchase Agreement;
- 350,223 Additional Commitment Shares to be issued to Lincoln Park as additional consideration for its irrevocable commitment to purchase shares of our common stock under the Purchase Agreement, following our receipt of gross proceeds equal to the full Initial Available Amount from sales of common stock to Lincoln Park under the Purchase Agreement; and
- Up to 8,000,000 shares of our common stock we may issue and sell to Lincoln Park from time to time, at our sole discretion, during the 24-month period commencing on the Commencement Date in accordance with the Purchase Agreement.

Selling Stockholder

Lincoln Park Capital Fund, LLC. See “Selling Stockholder” on page 20 of this prospectus.

Shares of Common Stock Outstanding Prior to This Offering

16,539,767 shares of common stock.

Shares of Common Stock Outstanding After This Offering

24,889,990 shares of common stock, assuming the sale of a total of 8,000,000 shares of common stock to the Selling Stockholder under the Purchase Agreement and issuance of the Additional Commitment Shares. The actual number of shares outstanding after this offering will vary depending upon the actual number of shares we issue and sell to the Selling Stockholder under the Purchase Agreement after the date of this prospectus.

Use of Proceeds

We will not receive any of the proceeds from the sale of shares of our common stock by the Lincoln Park in this offering. We may receive, initially, aggregate gross proceeds of up to the Initial Available Amount and, upon receipt of the full amount thereof, additional aggregate gross proceeds of up to the Additional Available Amount (for total aggregate gross proceeds of up to the Total Available Amount) from sales of shares of our common stock we make to Lincoln Park, if any, pursuant to the Purchase Agreement, assuming that we sell the full amount of our common stock that we have the right, but not the obligation to sell to Lincoln Park under the Purchase Agreement. Any proceeds that we receive from sales of shares of our common stock to the Selling Stockholder under the Purchase Agreement will be used for working capital and general corporate purposes. See “Use of Proceeds.”

Market for Our Shares of Common Stock

Our common stock is listed on the Nasdaq Capital Market under the symbol “TPST”.

Risk Factors

Any investment in the securities offered hereby is speculative and involves a high degree of risk. You should carefully consider the information set forth under “Risk Factors,” commencing on page 6 of this prospectus, as well as all other information contained and incorporated by reference in this prospectus.

The number of shares of common stock to be outstanding is based on 16,539,767 shares of common stock outstanding as of August 19, 2026 (which includes the 560,356 Initial Commitment Shares) and excludes:

- 799,902 shares of our common stock issuable upon the exercise of stock options outstanding as of August 19, 2026, at a weighted-average exercise price of \$36.81 per share;
- 11,064,204 shares of our common stock issuable upon the exercise of warrants outstanding as of August 19, 2026, at a weighted-average exercise price of \$12.09 per share;
- 1,304,070 shares of our common stock reserved for future issuance under our Amended and Restated 2023 Equity Incentive Plan as of August 19, 2026; and
- 107,069 shares of our common stock reserved for future issuance under our 2019 Employee Stock Purchase Plan as of August 19, 2026.

Unless otherwise indicated, all information in this prospectus assumes no exercise of the outstanding options and warrants or any issuance of shares under outstanding restricted stock units, in each case as described above.

RISK FACTORS

An investment in our common stock involves a high degree of risk. You should consider carefully the risks below and the risk and uncertainties described under the heading “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2025, and in our subsequent Quarterly Reports on Form 10-Q, as filed with the SEC, which are incorporated by reference in this prospectus, including our audited consolidated financial statements and the related notes, before you decide whether to purchase our common stock. If any of such risks actually occur, our business, financial condition, results of operations, cash flow and prospects could be materially and adversely affected. As a result, the trading price of our common stock could decline and you could lose all or part of your investment in our common stock.

Risks Related to this Offering

The issuance and sale of our common stock to the Selling Stockholder may cause dilution to our other stockholders and the sale of the shares of common stock acquired by the Selling Stockholder, or the perception that such sales may occur, could cause the price of our common stock to fall.

Lincoln Park has committed to purchase up to \$50 million aggregate gross proceeds from sales of common stock (initially \$25 million and if the full Initial Available Amount is purchased, then immediately and automatically up to an additional \$25 million aggregate gross proceeds) of our common stock under the Purchase Agreement. The purchase price for the shares that we may sell to Lincoln Park under the Purchase Agreement remains subject to the pricing formula in the Purchase Agreement and will fluctuate based on the price of our common stock. Depending on market liquidity at the time, any future sales of such shares may cause the trading price of our common stock to fall.

We generally have the right to control the timing and amount of any future sales of our shares to the Selling Stockholder. Any sales of our common stock to the Selling Stockholder will depend upon market conditions and other factors to be determined by us. We may ultimately decide to sell to the Selling Stockholder all, some or none of the shares of our common stock that may be available for us to sell pursuant to the Purchase Agreement. If and when we sell shares to the Selling Stockholder, the Selling Stockholder may then resell all, some or none of those shares at any time or from time to time in its discretion. See the section titled “Plan of Distribution” elsewhere in this prospectus for more information. Therefore, our sales to the Selling Stockholder could result in substantial dilution to the interests of other holders of our common stock. Additionally, the sale of a substantial number of shares of our common stock to the Selling Stockholder, or the anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales.

It is not possible to predict the actual number of shares of common stock we may sell to Lincoln Park under the Purchase Agreement or the actual gross proceeds resulting from those sales.

The shares of our common stock that may be issued under the Purchase Agreement may be sold by us to Lincoln Park at our discretion from time to time over an approximately 24-month period commencing on the Commencement Date.

We generally have the right to control the timing and amount of any sales of our shares of common stock to Lincoln Park under the Purchase Agreement, pursuant to which we may issue and sell up to \$50.0 million of shares of common stock, subject to the conditions contained in the Purchase Agreement. Sales of our common stock, if any, to Lincoln Park under the Purchase Agreement will depend upon market conditions and other factors to be determined by us. We may ultimately decide to sell to Lincoln Park all, some or none of the shares of our common stock that may be available for us to sell to Lincoln Park pursuant to the Purchase Agreement.

Because the purchase price per share to be paid by Lincoln Park for the shares of common stock that we may elect to sell to Lincoln Park under the Purchase Agreement, if any, will fluctuate based on the market prices

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of our common stock at the time we elect to sell shares to Lincoln Park pursuant to the Purchase Agreement, if any, it is not possible for us to predict, as of the date of this prospectus and prior to any such sales, the number of shares of common stock that we will sell to Lincoln Park under the Purchase Agreement, the purchase price per share that Lincoln Park will pay for shares purchased from us under the Purchase Agreement, or the aggregate gross proceeds that we will receive from those purchases by Lincoln Park under the Purchase Agreement.

Moreover, although the Purchase Agreement provides that we may sell an aggregate of \$50,000,000 of our common stock to Lincoln Park, only 8,910,579 shares of common stock are being registered under the Securities Act for resale by Lincoln Park under the registration statement of which this prospectus is a part, consisting of (i) the 560,356 Initial Commitment Shares that we issued to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the Purchase Agreement, (ii) the 350,223 Additional Commitment Shares that may be issued to Lincoln Park as additional consideration for its irrevocable commitment to purchase shares of our common stock under the Purchase Agreement, following full funding of the Initial Available Amount, and (iii) 8,000,000 shares of our common stock that we may elect to sell to Lincoln Park, in our sole discretion, from time to time from and after the Commencement Date under the Purchase Agreement.

If, after the Commencement Date, we elect to sell to the Selling Stockholder the 8,000,000 shares of common stock being registered for resale by Lincoln Park under this prospectus that are available for sale by us to the selling stockholder under the Purchase Agreement, depending on the market prices of our common stock at the time of such sales, the actual gross proceeds from the sale of all such shares of common stock by us to Lincoln Park may be substantially less than the \$50,000,000 total purchase commitment available to us under the Purchase Agreement, which could materially adversely affect our liquidity.

If it becomes necessary for us to issue and sell to Lincoln Park shares of common stock in excess of the Exchange Cap (as defined below) under the Purchase Agreement in order to receive aggregate gross proceeds equal to \$50,000,000 under the Purchase Agreement, then for so long as the Exchange Cap continues to apply to issuances and sales of common stock under the Purchase Agreement, we must first obtain stockholder approval to issue shares of common stock in excess of the Exchange Cap in accordance with applicable Nasdaq listing rules. Furthermore, if we elect to issue and sell to Lincoln Park more than the 8,000,000 shares of our common stock that registered for resale by Lincoln Park hereunder, which we have the right, but not the obligation, to do, we must first file with the SEC one or more additional registration statements to register under the Securities Act for resale by Lincoln Park such additional shares of our common stock we wish to sell from time to time under the Purchase Agreement, which the SEC must declare effective, in each case before we may elect to sell any additional shares of our common stock to Lincoln Park under the Purchase Agreement. Any issuance and sale by us under the Purchase Agreement of a substantial amount of shares of common stock in addition to the 8,910,579 shares of common stock being registered for resale by Lincoln Park under this prospectus could cause additional substantial dilution to our stockholders. The number of shares of our common stock ultimately offered for sale by Lincoln Park is dependent upon the number of shares of common stock, if any, we ultimately sell to Lincoln Park under the Purchase Agreement.

Investors who buy shares at different times will likely pay different prices.

Pursuant to the Purchase Agreement, we will have discretion, subject to market demand, to vary the timing, prices, and number of shares sold to Lincoln Park. If and when we do elect to sell shares of our common stock to Lincoln Park pursuant to the Purchase Agreement, Lincoln Park may resell all, some or none of such shares at any time or from time to time in its discretion and at different prices. As a result, investors who purchase shares from Lincoln Park in this offering at different times will likely pay different prices for those shares, and may therefore experience different levels of dilution and in some cases substantial dilution and different outcomes in their investment results. Investors may experience a decline in the value of the shares they purchase from Lincoln Park in this offering as a result of future sales made by us to Lincoln Park at prices lower than the prices such investors paid for their shares in this offering.

Our management will have broad discretion over the use of the net proceeds, if any, from our sale of shares of common stock to Lincoln Park, and you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Our management will have broad discretion as to the use of the net proceeds from our sale of shares of common stock to Lincoln Park, and we could use them for purposes other than those contemplated at the time of commencement of this offering. Accordingly, you will be relying on the judgment of our management with regard to the use of those net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that, pending their use, we may invest those net proceeds in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flows.

We may not have access to the full amount available under the Purchase Agreement with Lincoln Park. We may require additional financing to sustain our operations, without which we may not be able to continue operations, and the terms of subsequent financings may adversely impact our stockholders.

We may direct Lincoln Park to purchase up to \$50,000,000 of shares of our common stock from time to time under the Purchase Agreement over a 24-month period generally in amounts up to 60,000 shares of our common stock, which may be increased to up to 70,000 shares if the last closing price for our common stock at the time of the sale is not below \$1.00 and up to a maximum of 80,000 shares if the last closing price for our common stock at the time of the sale is not below \$2.00, provided that Lincoln Park's maximum purchase obligation under any single Regular Purchase shall not exceed \$500,000. Moreover, under certain circumstances as set forth in the Purchase Agreement, we may, in our sole discretion, also direct Lincoln Park to purchase additional shares of common stock in "Accelerated Purchases," and "Additional Accelerated Purchases" as set forth in the Purchase Agreement.

Depending on the prevailing market price of our common stock, we may not be able to sell shares to Lincoln Park for the maximum \$50,000,000 over the term of the Purchase Agreement. We will need to seek stockholder approval before issuing more than the Exchange Cap limit of 3,195,881 shares of common stock under the Purchase Agreement (which represents 19.99% of our outstanding shares immediately prior to the execution of the Purchase Agreement), unless the average price per share of common stock for all shares of common stock sold by the Company to Lincoln Park under the Purchase Agreement equals or exceeds \$1.3854 per share (the "Minimum Price") (representing the lower of (A) the official closing price of the common stock on Nasdaq on the trading day immediately preceding the date of the Purchase Agreement and (B) the average official closing price of the common stock on Nasdaq for the five consecutive trading days ending on the trading day immediately preceding the date of the Purchase Agreement, as adjusted under applicable Nasdaq rules to take into account the issuance of Commitment Shares to Lincoln Park in exchange for non-cash consideration), such that the Exchange Cap limitation would no longer apply to issuances and sales of common stock by the Company to Lincoln Park under the Purchase Agreement under applicable Nasdaq listing rules. In addition, Lincoln Park will not be required to purchase any shares of our common stock if such purchase would result in Lincoln Park's beneficial ownership of our common stock exceeding the Beneficial Ownership Limitation (as defined below) of 4.99% of the outstanding shares of our common stock. Our inability to access a portion or the full amount available under the Purchase Agreement, in the absence of any other financing sources, could have a material adverse effect on our business and financial position.

The extent to which we rely on Lincoln Park as a source of funding will depend on a number of factors, including the prevailing market price of our common stock and the extent to which we are able to secure working capital from other sources. Assuming a purchase price of \$1.02 (which represents the closing price of our common stock on August 20, 2026), the purchase by Lincoln Park of 8,000,000 shares of common stock issuable under the Purchase Agreement and being registered for resale by Lincoln Park hereunder would result in gross proceeds to us of approximately \$8,160,000. If obtaining sufficient funding from Lincoln Park were to prove

unavailable or prohibitively dilutive, we will need to secure other sources of funding in order to satisfy our working capital needs. Even if we sell all \$50,000,000 of shares of our common stock to Lincoln Park under the Purchase Agreement, we may still need additional capital to finance our future business plans and working capital needs, and we may have to raise funds through the issuance of equity or debt securities.

Depending on the type and the terms of any financing we pursue, stockholders' rights and the value of their investment in our common stock could be reduced. A financing could involve one or more types of securities, including preferred stock, common stock, convertible debt or warrants to acquire common or preferred stock. These securities could be issued at or below the then prevailing market price for our common stock. In addition, if we issue secured debt securities, the holders of the debt would have a claim to our assets that would be prior to the rights of stockholders until the debt is paid. Interest on these debt securities would increase costs and negatively impact operating results and liquidity. If the issuance of new securities results in diminished rights to holders of our common stock, the market price of our common stock could be negatively impacted.

Should the financing we require to sustain our working capital needs be unavailable or prohibitively expensive when we require it, the consequences could be a material adverse effect on our business, operating results, financial condition and prospects.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements. Certain statements in this prospectus may constitute “forward-looking statements” for purposes of the federal securities laws. Our forward-looking statements include, but are not limited to, statements regarding expectations, hopes, beliefs, intentions or strategies regarding the future. In addition, any statements that refer to projections, forecasts or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intends,” “may,” “might,” “plan,” “possible,” “potential,” “predict,” “project,” “should,” “will,” “would” and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking. Forward-looking statements in this prospectus may include, for example, statements about:

- our ability to continue as a going concern absent access to sources of liquidity, as well as our history of recurring losses and negative cash flows from operating activities, significant future commitments and the uncertainty regarding the adequacy of our liquidity to pursue our complete business objectives;
- our ability to maintain compliance with the Nasdaq listing standards;
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- the development, regulatory approval, efficacy and commercialization of competing products;
- the development plans, regulatory approvals, and timing for TPST-4003 and other product candidates;
- our ability to establish sales and marketing capabilities or enter into agreements with third parties to market and sell our product candidates;
- our ability to retain regulatory approval for our product candidates or future product candidates in the United States and in any foreign countries in which we may seek to do business;
- our ability to retain and hire directors, senior management, or operational personnel;
- our ability to develop and maintain our corporate infrastructure, including our ability to design and maintain an effective system of internal controls;
- the general economic, political, and market conditions and overall fluctuations in the financial markets in the United States and abroad, including as a result of bank failures, public health crises or geopolitical tensions;
- our expectation regarding the period during which we will qualify as a smaller reporting company under the federal securities laws; and
- our expectations regarding our ability to obtain, maintain and enforce intellectual property protection for our products and technology, as well as our ability to operate our business without infringing, misappropriating or otherwise violating the intellectual property rights of others.

The forward-looking statements contained in this prospectus are based on current expectations and beliefs concerning future developments and their potential effects on the Company. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties, some of which are beyond our control, or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described in the section entitled “Risk Factors” and in our periodic filings with the SEC. Our SEC filings are available publicly on the SEC website at www.sec.gov. Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. Accordingly, forward-looking statements in this prospectus should not be relied upon as representing our views as of any subsequent date, and we undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

THE LINCOLN PARK TRANSACTION

General

On August 13, 2026, we entered into the Purchase Agreement with Lincoln Park, pursuant to which Lincoln Park has agreed to purchase from us up to an aggregate of \$50,000,000 of our common stock (subject to certain limitations) from time to time over the term of the Purchase Agreement. Pursuant to the Purchase Agreement, we may receive aggregate gross proceeds up to the Initial Available Amount from sales of common stock to Lincoln Park and, upon our receipt of gross proceeds equal to the full Initial Available Amount from such sales, the total aggregate dollar amount that will be available to us under the Purchase Agreement will automatically increase by the Additional Available Amount, and thereafter we may receive up to such Additional Available Amount (or up to the Total Available Amount) from sales of common stock to Lincoln Park under the Purchase Agreement.

Also on August 13, 2026, we entered into the Registration Rights Agreement, pursuant to which we filed with the SEC the registration statement that includes this prospectus to register under the Securities Act for resale by Lincoln Park up to 8,910,357 shares of common stock, consisting of (i) the 560,356 Initial Commitment Shares that we previously issued to Lincoln Park on August 13, 2026 as consideration for its commitment to purchase shares of our common stock at our direction from time to time after the Commencement Date under the Purchase Agreement, (ii) 350,223 Additional Commitment Shares to be issued to Lincoln Park as additional consideration for its irrevocable commitment to purchase shares of our common stock under the Purchase Agreement, following our receipt of gross proceeds equal to the full Initial Available Amount from sales of common stock to Lincoln Park under the Purchase Agreement and (iii) up to 8,000,000 shares of our common stock that we may elect to sell to Lincoln Park, in our sole discretion, from time to time from and after the Commencement Date under the Purchase Agreement.

We do not have the right to commence any sales of common stock to Lincoln Park under the Purchase Agreement until all of the conditions set forth in the Purchase Agreement have been satisfied on the Commencement Date, including that the registration statement of which this prospectus is a part is declared effective by the SEC and a final prospectus relating thereto is filed with the SEC. From and after the Commencement Date, on any business day that we select as the purchase date therefor (subject to adjustment as set forth in the Purchase Agreement) on which the closing sale price of our common stock is not below \$0.15 share (subject to adjustment as set forth in the Purchase Agreement) (the “Floor Price”), we may, from time to time and at our sole discretion for a period of up to 24-months after the Commencement Date, by written notice delivered by us to Lincoln Park, direct Lincoln Park to purchase up to 60,000 shares of common stock (subject to adjustment as set forth in the Purchase Agreement) in a Regular Purchase, at a purchase price per share that will be determined and fixed in accordance with the Purchase Agreement at the time we deliver such written notice to Lincoln Park on the purchase date for such Regular Purchase. The maximum share limit for a Regular Purchase shall be increased to higher share threshold amounts in the Purchase Agreement, to up to 70,000 shares and thereafter up to a maximum share limit of 80,000 shares of common stock, with the applicable maximum share limit determined by whether the closing price for our common stock on the applicable purchase date exceeds certain price thresholds set forth in the Purchase Agreement, in each case, subject to adjustment for any recapitalization, non-cash dividend, forward or reverse stock split or other similar transactions as provided in the Purchase Agreement; however, Lincoln Park’s maximum purchase commitment in any single regular purchase may not exceed \$500,000. The purchase price per share of common stock sold in each such Regular Purchase, if any, will be based on market prices of the common stock over a specified period immediately preceding the time of sale as computed under the Purchase Agreement.

In addition, at our discretion, Lincoln Park has committed to purchase other “Accelerated Purchases” or “Additional Accelerated Purchases” under certain circumstances. We will control the timing and amount of any sales of our common stock to Lincoln Park. The purchase price per share of common stock sold in each such Accelerated Purchase and Additional Accelerated Purchase, if any, will be based on market prices of the common stock on the applicable purchase dates for such Accelerated Purchases and Additional Accelerated Purchases as computed under the Purchase Agreement.

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Under the applicable Nasdaq listing rules, in no event may we issue to Lincoln Park under the Purchase Agreement more than the Exchange Cap limit of 3,195,881 shares of our common stock, which number of shares is equal to 19.99% of the shares of common stock outstanding immediately prior to the execution of the Purchase Agreement, unless (i) the Company first obtains stockholder approval to issue shares of common stock in excess of the Exchange Cap in accordance with applicable Nasdaq listing rules, or (ii) at the time the Company has issued shares of common stock equal to the Exchange Cap and at all times thereafter, the average price per share of common stock for all shares of common stock sold by the Company to Lincoln Park under the Purchase Agreement equals or exceeds \$1.3854 per share (representing the lower of the official closing price of the common stock on Nasdaq on the trading day immediately preceding the date of the Purchase Agreement and the average official closing price of the common stock on Nasdaq for the five consecutive trading days ending on the trading day immediately preceding the date of the Purchase Agreement, as adjusted under applicable Nasdaq rules to take into account the issuance of Commitment Shares to Lincoln Park for non-cash consideration), such that the Exchange Cap limitation would no longer apply to issuances and sales of common stock by the Company to Lincoln Park under the Purchase Agreement under applicable Nasdaq listing rules.

The Purchase Agreement also prohibits the Company from directing Lincoln Park to purchase any shares of common stock if those shares, when aggregated with all other shares of common stock then beneficially owned by Lincoln Park (as calculated pursuant to Section 13(d) of the Exchange Act and Rule 13d-3 thereunder), would result in Lincoln Park beneficially owning more than the Beneficial Ownership Limitation of 4.99% of the outstanding shares of common stock.

The Company will control the timing and amount of any sales of common stock to Lincoln Park pursuant to the Purchase Agreement. Lincoln Park has no right to require the Company to sell any shares of common stock to Lincoln Park under the Purchase Agreement, but Lincoln Park is obligated to make purchases of common stock as the Company directs, upon the terms and subject to the satisfaction of the conditions set forth in the Purchase Agreement. Neither we nor Lincoln Park may assign or transfer our respective rights and obligations under the Purchase Agreement without consent of the other party, and no provision of the Purchase Agreement or the Registration Rights Agreement may be modified or waived by the Company or Lincoln Park.

Actual sales of shares of common stock by the Company to Lincoln Park under the Purchase Agreement will depend on a variety of factors to be determined by the Company from time to time, including, among others, market conditions, the trading price of the common stock and determinations by the Company as to the appropriate sources of funding for the Company and its operations.

As consideration for Lincoln Park's commitment to purchase shares of common stock from us at our direction from time to time from and after the Commencement Date pursuant to the Purchase Agreement, promptly following our execution of the Purchase Agreement and the Registration Rights Agreement, we issued 560,356 Initial Commitment Shares to Lincoln Park on August 13, 2026. All 560,356 Initial Commitment Shares that we issued to Lincoln Park are included in the 8,910,579 shares of common stock being registered under the Securities Act for resale by Lincoln Park under the registration statement of which this prospectus is a part.

As of August 19, 2026, there were 16,539,767 shares of common stock outstanding (which includes the 560,356 Initial Commitment Shares), of which 8,502,834 shares were held by affiliates of the Company. Although the Purchase Agreement provides that we may, in our discretion, from time to time after the date of this prospectus and during the term of the Purchase Agreement, direct Lincoln Park to purchase shares of our common stock from us in one or more purchases under the Purchase Agreement, for a maximum aggregate purchase price of up to \$50,000,000, only 8,910,579 shares of common stock (910,579 of which represent the Commitment Shares that have been or may be issued by us to Lincoln Park, for which we will receive no cash proceeds) are being registered for resale under the registration statement that includes this prospectus. If, in addition to the 560,356 Initial Commitment Shares that are currently outstanding and the 350,223 Additional Commitment Shares that may be issued, all of the additional 8,000,000 shares of common stock offered for resale by Lincoln Park under this prospectus (without taking into account the 19.99% Exchange Cap limitation

applicable to issuances and sales of common stock under the Purchase Agreement) were issued and outstanding as of August 19, 2026, such shares would represent approximately 33% of the total number of shares of our common stock outstanding, and approximately 50% of the total number of outstanding shares held by non-affiliates of the Company, in each case as of August 19, 2026.

Purchases of Shares of our common stock under the Purchase Agreement

Regular Purchases

From and after the Commencement Date, on any business day that we select as the purchase date therefor on which the closing sale price of our common stock is not below the Floor Price (and provided all shares of common stock subject to all prior Regular Purchases that we have effected under the Purchase Agreement, if any, have been received by Lincoln Park before we deliver notice to Lincoln Park for such Regular Purchase in accordance with the Purchase Agreement), the Company may, by written notice delivered by us to Lincoln Park, direct Lincoln Park to purchase up to 60,000 shares of common stock on such purchase date in a Regular Purchase, provided, however, that the maximum number of shares we may sell to Lincoln Park in a Regular Purchase may be increased to:

- up to 70,000 shares, provided that the closing sale price of the common stock on the applicable purchase date is not below \$1.00; and
- up to 80,000 shares, provided that the closing sale price of the common stock on the applicable purchase date is not below \$2.00 (each of such share and dollar amounts subject to adjustment for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction as provided in the Purchase Agreement).

In any case, however, Lincoln Park's maximum purchase commitment in any single Regular Purchase may not exceed \$500,000.

The purchase price per share of common stock sold in each such Regular Purchase, if any, will be equal ninety-seven percent (97%) of the lower of:

- the lowest sale price for our common stock on the purchase date for such Regular Purchase; and
- the arithmetic average of the three lowest closing sale prices for our common stock during the 10 consecutive business days ending on the business day immediately preceding the purchase date for such Regular Purchase.

Accelerated Purchases

In addition to Regular Purchases described above, on any purchase date for a Regular Purchase on which we have properly submitted a Regular Purchase notice directing Lincoln Park to purchase the maximum number of shares of our common stock that we are then permitted to include in a single Regular Purchase notice (and provided all shares of common stock subject to all prior Regular Purchases, Accelerated Purchases and Additional Accelerated Purchases that we have effected under the Purchase Agreement prior to such purchase date, if any, have been received by Lincoln Park before we deliver notice to Lincoln Park for such Accelerated Purchase in accordance with the Purchase Agreement), we may, by written notice delivered by us to Lincoln Park simultaneously with such Regular Purchase notice for such corresponding Regular Purchase, direct Lincoln Park to purchase an additional amount of our common stock, which we refer to as an "Accelerated Purchase," on the next business day following such purchase date for such corresponding Regular Purchase, which we refer to as the "Accelerated Purchase Date," not to exceed the lesser of:

- 30% of the aggregate number of shares of our common stock traded during all or, if certain trading volume or market price thresholds specified in the Purchase Agreement are crossed on the applicable Accelerated Purchase Date, the portion of the normal trading hours the applicable Accelerated Purchase Date prior to

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such time that any one of such thresholds is crossed, which period of time on the applicable Accelerated Purchase Date we refer to as the “Accelerated Purchase Measurement Period”; and

- 300% of the number of shares of common stock purchased pursuant to the corresponding Regular Purchase.

The purchase price per share for the shares of common stock subject to an Accelerated Purchase will be equal to 96% of the lower of:

- the volume weighted average price of our common stock on the Accelerated Purchase Measurement Period on the applicable Accelerated Purchase Date; and
- the closing sale price of our common stock on the applicable Accelerated Purchase Date.

Additional Accelerated Purchases

We may also direct Lincoln Park, by written notice delivered to Lincoln Park not later than 1:00 p.m., Eastern time, on an Accelerated Purchase Date (and provided all shares of common stock subject to all prior Regular Purchases, Accelerated Purchases and Additional Accelerated Purchases that we have effected under the Purchase Agreement, including those prior Accelerated Purchases and Additional Accelerated Purchases effected on the same Accelerated Purchase Date as the applicable Additional Accelerated Purchase, if any, have been received by Lincoln Park in accordance with the Purchase Agreement before we deliver notice to Lincoln Park for such Additional Accelerated Purchase), to purchase an additional amount of our common stock on such same Accelerated Purchase Date, which we refer to as an “Additional Accelerated Purchase,” of up to the lesser of:

- 30% of the aggregate number of shares of our common stock traded during the portion of the normal trading hours on the applicable Accelerated Purchase Date determined in accordance with the Purchase Agreement, which period of time on the applicable Accelerated Purchase Date we refer to as the Additional Accelerated Purchase Measurement Period; and
- 300% of the number of shares of common stock purchased pursuant to the Regular Purchase corresponding to the Accelerated Purchase effected on such same Accelerated Purchase Date.

The purchase price per share for the shares subject to an Additional Accelerated Purchase will be equal to 96% of the lower of:

- the volume weighted average price of our common stock during the applicable Additional Accelerated Purchase Measurement Period for such Additional Accelerated Purchase; and
- the closing sale price of our common stock on the applicable same Accelerated Purchase Date.

We may, in our sole discretion, submit multiple Additional Accelerated Purchase notices to Lincoln Park prior to 1:00 p.m., Eastern time, on a single Accelerated Purchase Date, again provided all shares of common stock subject to all prior Regular Purchases, Accelerated Purchases and Additional Accelerated Purchases, including those prior Accelerated Purchases and Additional Accelerated Purchases effected on the same Accelerated Purchase Date as the applicable Additional Accelerated Purchase have been properly delivered to Lincoln Park in accordance with the Purchase Agreement prior to such time.

In the case of Regular Purchases, Accelerated Purchases and Additional Accelerated Purchases, the purchase prices per share of common stock to be sold therein will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction occurring during the business days used to compute the purchase price.

Other than as described above, there are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park.

Suspension Events

“Suspension Events” under the Purchase Agreement include the following:

- the effectiveness of the registration statement of which this prospectus forms a part lapses for any reason (including, without limitation, the issuance of a stop order), or any required prospectus supplement and accompanying prospectus are unavailable for the resale by Lincoln Park of our common stock offered hereby, and such lapse or unavailability continues for a period of 10 consecutive business days or for more than an aggregate of 30 business days in any 365-day period;
- suspension by our principal market of our common stock from trading for a period of one business day;
- the delisting of our common stock from The Nasdaq Capital Market, our principal market, or any nationally recognize successor thereto, unless our common stock is not immediately thereafter trading on the New York Stock Exchange, The Nasdaq Global Market, The Nasdaq Global Select Market, the NYSE American, the NYSE Arca, or the OTCQX Best Market or the OTCQB Venture Market operated by OTC Markets Group Inc. (or any nationally recognized successors thereto);
- the failure of our transfer agent to issue to Lincoln Park shares of our common stock within two business days after the applicable date on which Lincoln Park is entitled to receive such shares of our common stock;
- our breach of any of the representations or warranties or covenants contained in the Purchase Agreement or Registration Rights Agreement that has or could have a material adverse effect on us and, in the case of a breach of a covenant that is reasonably curable, that is not cured within five consecutive business days;
- any voluntary or involuntary participation or threatened participation in insolvency or bankruptcy proceedings by or against us as provided in the Purchase Agreement;
- if at any time we are not eligible to transfer our common stock electronically;
- if at any time we have issued and sold under the Purchase Agreement an aggregate number of shares of common stock equal to the Exchange Cap (to the extent applicable under the terms of the Purchase Agreement) and our stockholders have not approved the issuance of shares of common stock under the Purchase Agreement in excess of the Exchange Cap in accordance with applicable Nasdaq listing rules; or
- if at any time Lincoln Park’s broker is unable to accept shares of our common stock for deposit for reasons not within Lincoln Park’s control.

Lincoln Park does not have the right to terminate the Purchase Agreement upon the occurrence of any of the Suspension Events set forth above, all of which are outside of Lincoln Park’s control, although the Purchase Agreement would automatically terminate without any action of the Company or Lincoln Park in the event of any voluntary or involuntary bankruptcy proceedings by or against the Company that are not discharged within 90 days. So long as a Suspension Event has occurred and is continuing, or if any event which, after notice and/or lapse of time, would reasonably be expected to become a Suspension Event has occurred and is continuing, we may not direct Lincoln Park to purchase any shares of our common stock under the Purchase Agreement.

Our Termination Rights

We have the unconditional right, at any time, for any reason and without any payment or liability to us, to terminate the Purchase Agreement upon one business day’s prior written notice to Lincoln Park. In the event of any voluntary or involuntary bankruptcy proceedings by or against the Company that are not discharged within 90 days, the Purchase Agreement would automatically terminate without any action of the Company or Lincoln Park. No termination of the Purchase Agreement will be effective during the pendency of any Regular Purchase, Accelerated Purchase or Additional Accelerated Purchase that has not then fully settled in accordance with the Purchase Agreement.

No Short-Selling or Hedging by Lincoln Park

Lincoln Park has represented to us that at no time prior to the time of execution of the Purchase Agreement has Lincoln Park or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short sale (as such term is defined in Rule 200 of Regulation SHO under the Exchange Act) of our common stock or any hedging transaction, which establishes a net short position with respect to our common stock. Lincoln Park agreed that during the term of the Purchase Agreement, it, its agents, representatives or affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

Prohibitions on Similar Transactions

There are no restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement or Registration Rights Agreement, except the Company is prohibited, subject to certain exceptions, until (i) the 24-month anniversary of the Commencement Date and (ii) in the event the Company terminates the Purchase Agreement, the earlier of (A) the one-hundred-eightieth (180th) calendar day after the effective date of any termination of the Purchase Agreement and (B) the date on which Lincoln Park no longer owns any Securities (as defined in the Purchase Agreement), whichever occurs first, from effecting or entering into any agreement to effect an “equity line of credit”, “at-the-market offering” or other similar offering with another third party in which the Company may issue and sell common stock, from time to time over a certain period of time, at future determined prices based on the market prices of the common stock at the time of each such issuance and sale. The foregoing prohibition is subject to certain exceptions, including that we may issue shares of common stock in an “at-the-market offering” under Rule 415(a)(4) under the Securities Act exclusively through one or more registered broker-dealer(s) acting as our agent(s) pursuant to a written agreement between us and such registered broker-dealer(s).

Effect of Performance of the Purchase Agreement on Our Stockholders

All shares of our common stock being registered for resale hereunder which may be issued or sold by us to Lincoln Park under the Purchase Agreement are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold from time to time over a period of up to 24-months commencing on the date that the registration statement of which this prospectus is a part becomes effective.

Pursuant to the Purchase Agreement, we will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold to Lincoln Park. Sales of our common stock, if any, to Lincoln Park under the Purchase Agreement will depend upon market conditions and other factors to be determined by us. We may ultimately decide to sell to Lincoln Park all, some or none of the shares of our common stock that may be available for us to sell to Lincoln Park pursuant to the Purchase Agreement. Because the purchase price per share to be paid by Lincoln Park for the shares of common stock that we may elect to sell to Lincoln Park under the Purchase Agreement, if any, will fluctuate based on the market prices of our common stock at the time we elect to sell shares to Lincoln Park pursuant to the Purchase Agreement, if any, it is not possible for us to predict, as of the date of this prospectus and prior to any such sales, the number of shares of common stock that we will sell to Lincoln Park under the Purchase Agreement, the purchase price per share that Lincoln Park will pay for shares purchased from us under the Purchase Agreement, or the aggregate gross proceeds that we will receive from those purchases by Lincoln Park under the Purchase Agreement.

If and when we do elect to sell shares of our common stock to Lincoln Park pursuant to the Purchase Agreement, after Lincoln Park has acquired such shares, Lincoln Park may resell all, some or none of such shares at any time or from time to time in its discretion and at different prices. As a result, investors who purchase shares from Lincoln Park in this offering at different times will likely pay different prices for those shares, and so may experience different levels of dilution and in some cases substantial dilution and different outcomes in their investment results. Investors may experience a decline in the value of the shares they purchase from Lincoln Park in this offering as a result of future sales made by us to Lincoln Park at prices lower than the prices such investors paid for their shares in this offering.

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Moreover, although the Purchase Agreement provides that we may, in our discretion, from time to time after the date of this prospectus and during the term of the Purchase Agreement, direct Lincoln Park to purchase shares of our common stock from us in one or more purchases under the Purchase Agreement, for a maximum aggregate purchase price of up to \$50,000,000, only 8,910,579 shares of common stock (560,256 of which represent the Initial Commitment Shares that have been issued by us to Lincoln Park on August 13, 2026, for which we will receive no cash proceeds and 350,223 of which represent Additional Commitment Shares that we may issue in the future, for which we will receive no cash proceeds) are being registered for resale under the registration statement that includes this prospectus. Therefore, only 8,000,000 of such shares of common stock represent shares that we may issue and sell to Lincoln Park for cash consideration in purchases under the Purchase Agreement from time to time, at our sole discretion, during the 24-month period commencing on the Commencement Date. If after the Commencement Date we elect to sell to the selling stockholder all of the 8,000,000 shares of common stock being registered for resale under this prospectus that are available for sale by us to the selling stockholder in purchases under the Purchase Agreement, the actual gross proceeds from the sale of all such shares may be substantially less than the \$50,000,000 total purchase commitment available to us under the Purchase Agreement, which could materially adversely affect our liquidity.

If it becomes necessary for us to issue and sell to Lincoln Park shares of common stock in excess of the Exchange Cap under the Purchase Agreement in order to receive aggregate gross proceeds equal to \$50,000,000 in under the Purchase Agreement, then for so long as the Exchange Cap continues to apply to issuances and sales of common stock under the Purchase Agreement, we must first obtain stockholder approval to issue shares of common stock in excess of the Exchange Cap in accordance with applicable Nasdaq listing rules. Furthermore, if we elect to issue and sell to Lincoln Park more than the 8,000,000 shares of our common stock that we may elect to issue and sell to Lincoln Park under the Purchase Agreement that are being registered for resale by Lincoln Park hereunder, which we have the right, but not the obligation, to do, we must first file with the SEC one or more additional registration statements to register under the Securities Act for resale by Lincoln Park such additional shares of our common stock, which the SEC must declare effective, in each case before we may elect to sell any such additional shares of our common stock. Any issuance and sale by us under the Purchase Agreement of a substantial amount of shares of common stock in addition to the 8,910,579 shares of common stock being registered for resale by Lincoln Park under this prospectus could cause additional substantial dilution to our stockholders.

The number of shares of common stock ultimately resold by Lincoln Park through this prospectus is dependent upon the total number of shares of common stock, if any, we elect to issue and sell to Lincoln Park under the Purchase Agreement from and after the Commencement Date and during the term of the Purchase Agreement. Issuances of our common stock to Lincoln Park under the Purchase Agreement will not affect the rights or privileges of our existing stockholders, except that the economic and voting interests of each of our existing stockholders will be diluted as a result of any such issuance. Although the number of shares of our common stock that our existing stockholders own will not decrease, the shares of our common stock owned by our existing stockholders will represent a smaller percentage of our total outstanding shares of our common stock after any such issuance of shares of our common stock to Lincoln Park under the Purchase Agreement.

The following table sets forth the amount of gross proceeds we would receive from Lincoln Park from our sale of up to 8,000,000 shares of our common stock (which excludes the 560,356 Initial Commitment Shares that we issued to Lincoln Park on August 13, 2026, for which we will receive no cash proceeds, and the 350,223 Additional Commitment Shares that we may issue in the future, for which we will receive no cash proceeds) that

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we are registering hereby that we may issue and sell to Lincoln Park in the future under the Purchase Agreement at varying purchase prices from and after the Commencement Date:

Assumed Average Purchase Price Per Share	Number of Shares to be Issued if Full Purchase(1)	Percentage of Outstanding Shares of Common Stock After Giving Effect to the Sales to Lincoln Park(2)	Gross Proceeds from the Future Sale of Shares to Lincoln Park Under the Purchase Agreement(1)
\$0.50	8,000,000	32.6%	\$ 4,000,000
\$0.75	8,000,000	32.6%	\$ 6,000,000
\$1.02(3)	8,000,000	32.6%	\$ 8,160,000
\$1.50	8,000,000	32.6%	\$12,000,000
\$2.00	8,000,000	32.6%	\$16,000,000

- (1) Although the Purchase Agreement provides that we may sell up to \$50,000,000 of our common stock to Lincoln Park, we are only registering 8,910,579 shares of our common stock for resale under the registration statement of which this prospectus forms a part, including the 560,356 Commitment Shares that we issued to Lincoln Park on August 13, 2026 in consideration of Lincoln Park's commitment to purchase shares of our common stock at our direction under the Purchase Agreement, for which we received no cash proceeds, and 350,223 Additional Commitment Shares that we may issue to Lincoln Park in the future, for which we will not receive any cash proceeds. Therefore, only 8,000,000 of such shares represent shares that we may issue and sell to Lincoln Park for cash consideration in purchases under the Purchase Agreement. The number of shares set forth in this column represents the number of shares determined by the Company to be registered for resale by Lincoln Park hereunder without regard for the Beneficial Ownership Limitation.
- (2) The denominator is based on 16,539,767 shares of our common stock outstanding as of August 19, 2026 (which includes the 560,356 Initial Commitment Shares that we issued to Lincoln Park on August 13, 2026), adjusted to include the number of shares of our common stock set forth in the adjacent column. The numerator is based on the number of shares of our common stock set forth in the adjacent column.
- (3) The closing price of our common stock on August 20, 2026.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of any common stock by the Selling Stockholder offered under this prospectus, but we will bear all fees and expenses incident to our obligation to register the shares of common stock being offered for resale hereunder by the Selling Stockholder.

We may receive up to \$50.0 million in aggregate gross proceeds under the Purchase Agreement, of which \$50.0 million remains to be purchased (initially \$25 million and if the full \$25 million is purchased, then immediately and automatically up to an additional \$25 million aggregate gross proceeds), from any sales we make to Lincoln Park pursuant to the Purchase Agreement. Assuming a purchase price of \$1.02 (which represents the closing price of our common stock on August 20, 2026), the purchase by Lincoln Park of the entire 8,000,000 shares being registered for resale hereunder, which we have the right but not the obligation to sell to Lincoln Park, would result in gross proceeds to us of approximately \$8.2 million, and we estimate approximately \$8.0 million of net proceeds, after estimated fees and expenses. See “Plan of Distribution” elsewhere in this prospectus for more information. We expect to use any proceeds that we receive under the Purchase Agreement for working capital and general corporate purposes.

SELLING STOCKHOLDER

This prospectus relates to the possible resale by the selling stockholder, Lincoln Park, of shares of our common stock that have been and may be issued to Lincoln Park pursuant to the Purchase Agreement.

We are filing the registration statement of which this prospectus is a part pursuant to the provisions of the Registration Rights Agreement, which we entered into with Lincoln Park on August 13, 2026 concurrently with our execution of the Purchase Agreement, in which we agreed to provide certain registration rights with respect to resales by Lincoln Park of the shares of our common stock that have been or may be issued to Lincoln Park under the Purchase Agreement. The selling stockholder may sell some, all or none of the shares of common stock included in this prospectus. We do not know how long the selling stockholder will hold the shares of our common stock before selling them, and we currently have no agreements, arrangements or understandings with the selling stockholder regarding the sale of any of the shares of common stock. See “Plan of Distribution.”

The table below sets forth, to our knowledge, information concerning the beneficial ownership of shares of our common stock by the selling stockholder as of August 19, 2026. The percentages of shares owned before and after the offering are based on 16,539,767 shares of our common stock outstanding as of August 19, 2026, which includes the 560,356 Initial Commitment Shares that we issued to Lincoln Park on August 13, 2026. The information in the table below with respect to the selling stockholder has been obtained from the selling stockholder.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to shares. Unless otherwise indicated below, to our knowledge, all persons named in the table have sole voting and investment power with respect to their shares of common stock. The inclusion of any shares in this table does not constitute an admission of beneficial ownership for the person named below.

Throughout this prospectus, when we refer to the shares of common stock being offered for resale by the Selling Stockholder, we are referring to the shares of common stock that have been and may be issued and sold by us to Lincoln Park pursuant to the Purchase Agreement, unless otherwise indicated.

<u>Name of Selling Stockholder</u>	<u>Number of Shares of Common Stock Owned Prior to Offering(2)</u>		<u>Maximum Number of Shares of Common Stock to be Offered Pursuant to this Prospectus(3)</u>	<u>Number of Shares of Common Stock Owned After Offering(4)</u>	
	<u>Number</u>	<u>Percent</u>		<u>Number</u>	<u>Percent</u>
Lincoln Park Capital Fund, LLC(1)	560,356	3.4%	8,910,579	0	—

- (1) Josh Scheinfeld and Jonathan Cope, the Managing Members of Lincoln Park Capital, LLC, the manager of Lincoln Park Capital Fund, LLC, are deemed to be beneficial owners of all of the shares of common stock owned by Lincoln Park Capital Fund, LLC. Messrs. Cope and Scheinfeld have shared voting and investment power over the shares being offered under the prospectus filed with the SEC in connection with the transactions contemplated under the Purchase Agreement. Neither Lincoln Park Capital, LLC nor Lincoln Park Capital Fund, LLC is a registered broker-dealer or an affiliate of a registered broker-dealer.
- (2) Represents the 560,356 Initial Commitment Shares that we issued to Lincoln Park on August 13, 2026 as consideration for its commitment to purchase our common stock at our direction under the Purchase Agreement. In accordance with Rule 13d-3(d) under the Exchange Act, we have excluded from the number of shares of our common stock beneficially owned prior to the offering all of the 8,000,000 shares of our common stock that we may issue and sell to Lincoln Park pursuant to the Purchase Agreement from and after commencement, as well as the Additional Commitment Shares, that are being registered for resale under the registration statement that includes this prospectus, because the issuance and sale of such shares to Lincoln Park under the Purchase Agreement is solely at our discretion and the sale of such shares and

conditions for the issuance of the Additional Commitment Shares) is subject to certain conditions, the satisfaction of all of which are outside of Lincoln Park's control, including the registration statement that includes this prospectus becoming and remaining effective under the Securities Act. Furthermore, under the terms of the Purchase Agreement, issuances and sales of shares of our common stock to Lincoln Park under the Purchase Agreement are subject to certain limitations on the amounts we may sell to Lincoln Park at any time, including the Exchange Cap and the Beneficial Ownership Limitation. See the description under the heading "The Lincoln Park Transaction" for more information about the Purchase Agreement.

- (3) Although the Purchase Agreement provides that we may sell up to \$50,000,000 of our common stock to Lincoln Park, we are only registering 8,910,579 shares of our common stock for resale under this prospectus, including the 910,579 Commitment Shares that we issued or may issue to Lincoln Park as consideration for its commitment to purchase our common stock at our direction under the Purchase Agreement, for which we will receive no cash proceeds. Therefore, only 8,000,000 of such shares represent shares that we may issue and sell to Lincoln Park for cash consideration in purchases under the Purchase Agreement from time to time, at our sole discretion, during the 24-month period commencing on the Commencement Date. Depending on the price per share at which we sell our common stock to Lincoln Park pursuant to the Purchase Agreement, we may need to sell to Lincoln Park under the Purchase Agreement more shares of our common stock than are offered under this prospectus in order to receive aggregate gross proceeds equal to the full \$50,000,000 available to us under the Purchase Agreement. If we choose to do so, we must first register for resale under the Securities Act such additional shares. The number of shares ultimately offered for resale by Lincoln Park is dependent upon the number of shares we sell to Lincoln Park under the Purchase Agreement.
- (4) Assumes the sale of all shares of our common stock registered for resale by the selling stockholder pursuant to the registration statement that includes this prospectus, although the Selling Stockholder is under no obligation known to us to sell any shares of common stock at any particular time.

PLAN OF DISTRIBUTION

The shares of our common stock offered by this prospectus are being offered by the Selling Stockholder, Lincoln Park Capital Fund, LLC. The shares may be sold or distributed from time to time by the Selling Stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of our common stock offered by this prospectus could be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents;
- "at the market" into an existing market for the shares of our common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares of our common stock offered by this prospectus may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares of our common stock offered by this prospectus may not be sold unless they have been registered or qualified for sale in the state or an exemption from the state's registration or qualification requirement is available and complied with.

Lincoln Park is an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act.

Lincoln Park has informed us that it intends to use an unaffiliated broker-dealer to effectuate all sales, if any, of our common stock that it has acquired and may in the future acquire from us pursuant to the Purchase Agreement. Such sales will be made at prices and at terms then prevailing or at prices related to the then current market price. Each such unaffiliated broker-dealer will be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. Lincoln Park has informed us that each such broker-dealer will receive commissions from Lincoln Park that will not exceed customary brokerage commissions.

Brokers, dealers, underwriters or agents participating in the distribution of the shares of our common stock offered by this prospectus may receive compensation in the form of commissions, discounts, or concessions from the purchasers, for whom the broker-dealers may act as agent, of shares of our common stock sold by Lincoln Park through this prospectus. The compensation paid to any such particular broker-dealer by any such purchasers of shares of our common stock sold by Lincoln Park may be less than or in excess of customary commissions. Neither we nor Lincoln Park can presently estimate the amount of compensation that any agent will receive from any purchasers of shares of our common stock sold by Lincoln Park.

We know of no existing arrangements between Lincoln Park or any other stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares of our common stock offered by this prospectus.

We may from time to time file with the SEC one or more supplements to this prospectus or amendments to the registration statement of which this prospectus is a part to amend, supplement or update information contained in this prospectus, including, if and when required under the Securities Act, to disclose certain information relating to a particular sale of shares of our common stock offered by this prospectus by the selling

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stockholder, including the names of any brokers, dealers, underwriters or agents participating in the distribution of such shares of our common stock by the selling stockholder, any compensation paid by Lincoln Park to any such brokers, dealers, underwriters or agents, and any other required information.

We will pay the expenses incident to the registration under the Securities Act of the offer and sale of the shares of our common stock included in this prospectus by Lincoln Park. We estimate that the total expenses for the offering will be approximately \$91,280.

We have agreed to indemnify Lincoln Park and certain other persons against certain liabilities in connection with the offering of shares of our common stock offered by this prospectus, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Lincoln Park has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to us by Lincoln Park specifically for use in this prospectus or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities.

Lincoln Park has represented to us that at no time prior to entering into the Purchase Agreement has Lincoln Park or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short sale (as such term is defined in Rule 200 of Regulation SHO of the Exchange Act) of our common stock or any hedging transaction, which establishes a net short position with respect to our common stock. Lincoln Park agreed that during the term of the Purchase Agreement, it, its agents, representatives and affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

We have advised Lincoln Park that it is required to comply with Regulation M promulgated under the Exchange Act. With certain exceptions, Regulation M precludes the Selling Stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the securities offered by this prospectus.

This offering will terminate on the date that all shares of our common stock offered by this prospectus have been sold by Lincoln Park.

Our common stock is currently listed on The Nasdaq Capital Market under the symbol "TPST".

LEGAL MATTERS

The validity of the securities offered by this prospectus has been passed upon for us by Greenberg Traurig, LLP.

EXPERTS

The consolidated financial statements of Tempest Therapeutics, Inc. appearing in Tempest Therapeutics, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2025 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring to those documents. We hereby "incorporate by reference" the documents listed below, which means that we are disclosing important information to you by referring you to those documents. The Registration Statement, including the exhibits, can be read at the SEC website referred to below under "*Where You Can Find More Information*." The information that we file later with the SEC will automatically update and in some cases supersede this information. Specifically, we incorporate by reference the following documents or information filed with the SEC (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2025, filed with the SEC on March 30, 2026;
- our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2026, filed with the SEC on May 14, 2026;
- our Quarterly Report on [Form 10-Q](#) for the quarter ended June 30, 2026, filed with the SEC on August 13, 2026;
- our Current Reports on Form 8-K, filed with the SEC on [January 28, 2026](#), [February 6, 2026](#), [February 25, 2026](#), [March 23, 2026](#), [May 6, 2026](#), [May 22, 2026](#), [May 22, 2026](#), [May 29, 2026](#), [June 2, 2026](#), [June 4, 2026](#), [June 23, 2026](#), [July 22, 2026](#), [July 28, 2026](#), [August 13, 2026](#), [August 13, 2026](#), [August 18, 2026](#) and [August 24, 2026](#); and
- the description of our common stock set forth in our registration statement on [Form 8-A](#) (File No. 001-35890), filed with the SEC on April 25, 2013, including any amendments thereto or reports filed for the purposes of updating this description, including [Exhibit 4.1](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2025 filed with the SEC on March 30, 2026.

In addition, all documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act (not including any information furnished under Item 2.02, 7.01, or 9.01 of Form 8-K or any other information that is identified as "furnished" rather than filed, which information is not incorporated by reference herein) after the initial filing date of the registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, as well as subsequent to the effectiveness of such registration statement and prior to the filing of a post-effective amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by

reference in the registration statement, of which this prospectus forms a part, and to be a part hereof from the date of filing of such documents.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of the registration statement, of which this prospectus forms a part, to the extent that a statement contained herein, or in any other subsequently filed document that also is deemed to be incorporated by reference herein, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of the registration statement, of which this prospectus forms a part.

We will provide without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request of that person, a copy of any and all of the reports or documents that have been incorporated by reference in this prospectus but not delivered with this prospectus. Please direct requests to us at the following address:

Tempest Therapeutics, Inc.
2000 Sierra Point Parkway, Suite 400
Brisbane, CA 94005
(415) 798-8589

You may also access these filings on our website at <http://www.tempesttx.com>. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement we filed with the SEC and does not contain all the information set forth or incorporated by reference in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements, or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference into this prospectus for a copy of such contract, agreement, or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly, and current reports, proxy statements, and other information with the SEC. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Our SEC filings are available to the public over the Internet on the SEC's website at <http://www.sec.gov>.

Our website address is <http://www.tempesttx.com>. The information contained on, or accessible through, our website is not incorporated into this prospectus and does not form a part hereof (other than those filings with the SEC that we specifically incorporate by reference into the prospectus or any supplement to this prospectus).

Tempest Therapeutics, Inc.

8,910,579 Shares of Common Stock

PROSPECTUS

August 31, 2026
