

Up to 9,231,092 shares of common stock



Maze Therapeutics, Inc.

This prospectus relates to the resale of up to 9,231,092 shares of common stock, par value \$0.001 per share (the “common stock”) of Maze Therapeutics, Inc. by the selling stockholders identified herein (the “Selling Stockholders”), consisting of (a) 4,000,002 shares of common stock (the “Initial Shares”) and (b) up to 5,231,090 shares of common stock (the “Warrant Shares” and together with the Initial Shares, the “Shares”) issuable upon the exercise of pre-funded warrants (the “Pre-Funded Warrants”) held by certain of the Selling Stockholders, in each case that we issued and sold to the Selling Stockholders pursuant to a securities purchase agreement we entered into with the Selling Stockholders on September 10, 2025 (the “Purchase Agreement”).

The Selling Stockholders may sell the Shares directly to purchasers or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions. The Selling Stockholders may sell the Shares at any time at market prices prevailing at the time of sale or at privately negotiated prices. For more information regarding the Selling Stockholders and the sale of the Shares, please refer to the sections entitled “*Selling Stockholders*” and “*Plan of Distribution*” located elsewhere in this prospectus.

We are not selling any securities under this prospectus and will not receive any of the proceeds from the sale of the Shares by the Selling Stockholders. The Selling Stockholders will bear all underwriting fees, commissions and discounts, if any, attributable to the sales of Shares and any transfer taxes. We will bear all other costs, expenses and fees in connection with the registration of the Shares.

Our common stock is listed on The Nasdaq Global Market under the symbol “MAZE.”

We are an “emerging growth company” and a “smaller reporting company” as defined under the federal securities laws and, as such, we have elected to comply with certain reduced reporting requirements for this prospectus and may elect to do so in future filings.

On November 5, 2025, the last reported sale price of our common stock was \$30.27 per share.

Investing in our common stock involves a high degree of risk. Please read the section entitled “[Risk Factors](#)” beginning on page 8 of this prospectus and under similar headings in the other documents that are incorporated by reference into this prospectus for a discussion of information that should be considered in connection with an investment in our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense. The securities are not being offered in any jurisdiction where the offer is not permitted.

The date of this prospectus is November 6, 2025.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-1 that we filed with the Securities and Exchange Commission (the “Commission”). The Selling Stockholders may, from time to time, offer and sell the Shares, as described in this prospectus, in one or more offerings. We will not receive any proceeds from the sale by the Selling Stockholders of the Shares offered by them described in this prospectus.

Neither we nor the Selling Stockholders have authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and, if applicable, any accompanying prospectus supplement or any free writing prospectus. Neither we nor the Selling Stockholders take any responsibility for, and provide no assurance as to the reliability of, any other information that others may give you. This prospectus and, if applicable, any accompanying prospectus supplement or any free writing prospectus, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and, if applicable, any accompanying prospectus supplement or any free writing prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and, if applicable, any accompanying prospectus supplement or any free writing prospectus, is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and, if applicable, any accompanying prospectus supplement or any free writing prospectus, is delivered or securities are sold on a later date.

This prospectus may be supplemented from time to time by one or more prospectus supplements. Any such prospectus supplements may include additional information, such as additional risk factors or other special considerations applicable to us, our business or results of operations or our common stock, and may also update or change the information in this prospectus. If there is any inconsistency between the information in this prospectus and any prospectus supplement, you should rely on the information in the prospectus supplement.

For investors outside the United States, neither we nor the Selling Stockholders 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 the United States. Persons outside of the United States who come into possession of this prospectus and any free writing prospectus related to this offering must inform themselves about, and observe any restrictions relating to, the offering of our securities and the distribution of this prospectus and any such free writing prospectus outside of the United States.

PROSPECTUS SUMMARY

This summary highlights information contained in other parts of this prospectus or incorporated by reference in this prospectus from our Annual Report on Form 10-K for the year ended December 31, 2024 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025, and our other filings with the SEC listed below under the heading “Incorporation of Certain Information by Reference.” This summary may not contain all the information that you should consider before investing in securities. You should read the entire prospectus and the information incorporated by reference in this prospectus carefully, including “Risk Factors” and the financial data and related notes and other information incorporated by reference, before making an investment decision. See “Special Note Regarding Forward-Looking Statements.” In this prospectus, unless context requires otherwise, references to “we,” “us,” “our,” or “the Company” refer Maze Therapeutics, Inc., a Delaware corporation and its consolidated subsidiaries.

Overview

We are a clinical-stage biopharmaceutical company harnessing the power of human genetics to develop novel, small molecule precision medicines for patients living with kidney and metabolic diseases, including obesity. We are advancing a pipeline using our Compass platform, which allows us to identify and characterize genetic variants in disease and then link those variants to the biological pathways that drive disease in specific patient groups through a process we refer to as variant functionalization. Our Compass platform has been purpose-built to inform all phases of our drug discovery and development process through clinical trial design. We are currently advancing two wholly-owned lead programs, MZE829 and MZE782, each of which represents a novel precision medicine-based approach. Our goal is to bring novel precision medicines to patients with kidney and metabolic diseases, which is where we believe we can maximize our impact on human health.

Our most advanced lead program, MZE829, is an oral, small molecule inhibitor of apolipoprotein L1 (“APOL1”) for the treatment of patients with APOL1-mediated kidney disease (“AMKD”), which is estimated to affect over one million patients in the United States alone. Although the link between APOL1 variants and renal dysfunction has been known for over a decade, we have identified a new protective variant that underpins our therapeutic approach for MZE829 and may ultimately allow us to address a broader population of AKD than has previously been possible in the clinical setting. In October 2024, we reported results for our Phase 1 clinical trial of MZE829, in which we enrolled 111 healthy patients who received either single or multiple ascending doses of 20 mg to 480 mg of MZE829 administered daily. Treatment was well tolerated with no severe adverse events or serious adverse events reported in patients treated with single doses up to 480 mg and multiple doses of up to 350 mg daily for seven days. Dose-proportional pharmacokinetics (“PK”) was observed with low variability (10-40%) across doses. We initiated a Phase 2 trial of MZE829 in November 2024, dosed our first patient in February 2025 and expect to report topline proof of concept data on initial patients by the end of the first quarter of 2026.

Our second lead program, MZE782, is an oral, small molecule inhibitor for the treatment of patients with phenylketonuria (“PKU”), an inherited metabolic disorder, and chronic kidney disease (“CKD”). SLC6A19 is a sodium-dependent neutral amino acid transporter expressed in the small intestine and proximal tubule of the kidney that plays a key role in the absorption and reabsorption of neutral amino acids. In PKU, SLC6A19 enables phenylalanine (“Phe”) uptake from the gut and reabsorption in the kidney – two key contributors to elevated plasma Phe levels in patients with deficient phenylalanine hydroxylase (“PAH”) activity. Inhibiting SLC6A19 with MZE782 offers a genotype- and PAH-agnostic, oral approach to lowering plasma Phe by limiting its entry into circulation. In CKD, SLC6A19-mediated reabsorption has the potential to contribute to metabolic overload in the proximal tubule of the kidney. Blocking this transporter may therefore reduce the burden of amino acids and toxins, potentially slowing disease progression. The potential mechanism is complementary to, as well as distinct from, SGLT2 inhibition. In September 2025, we reported results from our Phase 1 clinical trial of MZE782, in which we enrolled 112 healthy adult volunteers who received either single or multiple ascending

doses of 30 mg to 960 mg of MZE782 administered daily. Treatment was well tolerated with no serious adverse events, no severe adverse events and no treatment related adverse events (“TRAEs”) leading to discontinuation. We plan to initiate two Phase 2 proof-of-concept trials of MZE782 in 2026 in PKU and CKD.

Recent Developments

September 2025 Private Placement

On September 10, 2025, we entered into a securities purchase agreement (the “Purchase Agreement”) with the selling stockholders identified herein (the “Selling Stockholders”), pursuant to which we sold to the Selling Stockholders in a private placement (the “Private Placement”) an aggregate of (i) 4,000,002 shares (the “Initial Shares”) of our common stock, par value \$0.001 per share (the “common stock”), at a purchase price of \$16.25 per share and (ii) in lieu of shares of common stock for certain Selling Stockholders, pre-funded warrants (the “Pre-Funded Warrants”) to purchase up to an aggregate of 5,231,090 shares of common stock (the “Warrant Shares”, and together with the Initial Shares, the “Shares”) at a purchase price of \$16.249 per Pre-Funded Warrant. Each Pre-Funded Warrant has an exercise price of \$0.001 per Warrant Share, is exercisable at any time after their original issuance and will not expire.

The Pre-Funded Warrants provide that the holder of the Pre-Funded Warrants do not have the right to exercise any portion of its Pre-Funded Warrants if such holder, together with its affiliates, would beneficially own in excess of 4.99% or 9.99%, at the holder’s election, of the number of shares of common stock outstanding immediately after giving effect to such exercise.

The gross proceeds from the Private Placement were approximately \$150.0 million, before deducting placement agent fees and other expenses. The Company intends to use the proceeds from the private placement, together with its existing cash, cash equivalents and short-term investments, to advance the development of MZE829 in patients with APOL1-mediated kidney disease, initiate Phase 2 clinical trials of MZE782 in both PKU and CKD, continue progress on research and discovery programs, further the development of its Compass platform, and for working capital and other general corporate purposes.

MZE782 Phase 1 Trial Results

On September 11, 2025, we announced positive clinical results from the Phase 1 healthy volunteer study of MZE782. The Phase 1 trial of MZE782 was a randomized, double-blind, placebo-controlled study evaluating single ascending doses and multiple ascending doses of orally administered MZE782 in 112 healthy adult volunteers. The single ascending doses (“SAD”) ranged from 30 mg to 960 mg and the multiple ascending doses (“MAD”), with dosing once or twice daily for seven days, ranged from 120 mg to 240 mg twice daily and 120 mg to 720 mg once daily. The primary objective was to evaluate the safety and tolerability of single and multiple ascending oral doses of MZE782 in healthy volunteers. Secondary and exploratory endpoints included pharmacokinetics, food effect, pharmacodynamic measures of target engagement, specifically urinary excretion of Phe and glutamine (“Gln”) as predictive biomarkers of SLC6A19 inhibition and disease control, and estimated glomerular filtration rate (“eGFR”).

MZE782 was well tolerated across all doses in all cohorts. There were no serious adverse events, no severe adverse events and no TRAEs leading to discontinuation. In the single ascending dose portion of the study (n=56), there were a total of three TRAEs reported that were all mild in severity and not seen at the higher doses. Headache was reported in two patients (4%) and diarrhea was reported in one patient (2%). There were no TRAEs reported in the MAD portion of the study. No clinically relevant changes in vital signs, laboratory tests or electrocardiograms were observed.

MZE782 demonstrated a favorable plasma PK profile after single and multiple oral doses. Oral administration was associated with consistent absorption, with a time to maximum concentration (t_{max}) of six hours and a half-life (t_{1/2}) of 11 hours. Exposure increased proportionally with dose, and steady-state was achieved by Day 3. This is supportive of a once- or twice-daily dosing regimen to be evaluated in Phase 2.

MZE782 produced dose-dependent increases in 24-hour urinary excretion of the neutral amino acids Phe and Gln across both single ascending dose and multiple ascending dose cohorts, confirming target engagement and SLC6A19 inhibition.

All participants in the multiple ascending dose cohorts of the Phase 1 study were assessed for changes in eGFR. MZE782 demonstrated a dose-dependent initial eGFR dip over seven days of dosing that was similar in magnitude to what has been observed in patients initiating SGLT2 and RAAS inhibitors.

We plan to initiate two Phase 2 proof-of-concept trials of MZE782, evaluating plasma Phe reduction in PKU and proteinuria reduction in CKD in 2026.

Risk Factor Summary

Below is a summary of material factors that make an investment in our common stock speculative or risky. Importantly, this summary does not address all of the risks and uncertainties that we face. You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider this summary to be a complete discussion of all potential risks or uncertainties that may substantially impact our business. Additional discussion of the risks and uncertainties summarized in this risk factor summary, as well as other risks and uncertainties that we face, are described under the heading “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2024, filed with the SEC on March 31, 2025 (the “2024 Form 10-K”) and in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025 filed with the SEC on August 12, 2025 (the “Q2 2025 10-Q”) and this summary is qualified in its entirety by that discussion. Moreover, we operate in a competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible to predict the impact of all of these factors on our business, financial condition or results of operations. You should consider carefully the risks and uncertainties described below and under the heading “Risk Factors” in the 2024 Form 10-K and in the Q2 2025 Form 10-Q.

Some of the principal risks we are exposed to include:

- We are a clinical-stage biopharmaceutical company with a limited operating history, which may make it difficult to evaluate the success of our business to date and to assess our future viability. Since our inception, we have incurred significant operating losses and have not generated any product revenue. We expect to incur continued losses for the foreseeable future and may never achieve or maintain profitability.
- We will require substantial additional capital to finance our operations and achieve our goals. If we are unable to raise capital when needed or on terms acceptable to us, we may be forced to delay, reduce or eliminate our research or product development programs, any future commercialization efforts or other operations.
- We are early in our development efforts and highly dependent on the success of our lead programs. If we are unable to commercialize our therapeutic candidates or experience significant delays in doing so, our business will be materially harmed.
- Preclinical and clinical drug development is a lengthy and expensive process, with uncertain timelines and outcomes. If preclinical studies or clinical trials of our therapeutic candidates are prolonged or delayed, we may be unable to obtain required regulatory approvals, and therefore be unable to

commercialize our therapeutic candidates or any of our future therapeutic candidates on a timely basis or at all.

- We may not be successful in applying our Compass platform to identify targets with therapeutic potential or to discover and develop safe, effective or commercially viable therapeutic candidates.
- Certain of the diseases we, or which our partners, seek to treat have low prevalence and/or have available therapies, and it may be difficult for us or our partners to identify patients with these diseases or face competition in the recruitment of these limited groups of patients, which may lead to difficulties in enrolling clinical trials.
- Our Compass platform relies on access to high quality data repositories with paired genetic and clinical data and loss of such access, or the inability to use such data, could have a material adverse effect on our business, financial condition, results of operations and prospects.
- We have entered, and may in the future enter, into strategic collaborations, transactions and licensing partnerships for research, development or commercialization of our programs, including our first therapeutic candidate MZE001, and we may not be able to realize the full value of these partnerships or our partnered programs.
- We face significant competition in an environment of rapid technological change and there is a possibility that our competitors may achieve regulatory approval before us or develop therapies or technologies that are more advanced or effective than ours, which may harm our business and financial condition, and our ability to successfully market or commercialize our therapeutic candidates.
- Our success depends in part on our and our partners' ability to obtain, maintain, enforce and protect our intellectual property and proprietary rights. It is difficult and costly to protect our intellectual property rights and technologies, and we may not be able to ensure their protection. If we are unable to adequately protect our technologies or obtain and maintain patent protection for our technologies and products or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technologies and products similar or identical to ours, and our ability to successfully commercialize our technologies and products may be impaired.
- If we are sued for infringing, misappropriating or otherwise violating intellectual property or proprietary rights of third parties, such litigation or disputes could be costly and time-consuming and could prevent or delay us from developing or commercializing our therapeutic candidates.

Corporate Information

We were incorporated under the laws of the State of Delaware on August 29, 2017, originally under the name Genetic Modifiers NewCo, Inc. We changed our name on July 5, 2018 to Modulus Therapeutics, Inc. and on September 25, 2018, to Maze Therapeutics, Inc.

Our principal executive offices are located at 171 Oyster Point Blvd., Suite 300, South San Francisco, California 94080, and our telephone number is (650) 850-5070. Our website address is www.mazetx.com. The information contained on, or that can be accessed through, our website is not part of, and is not incorporated by reference into, this prospectus.

The mark "Maze Therapeutics," the Maze logo, "Maze Compass" and all product names are our registered or common law trademarks. All other service marks, trademarks and trade names appearing in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and tradenames referred to in this prospectus appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the right of the applicable licensor to these trademarks and tradenames.

Implications of Being an Emerging Growth Company and a Smaller Reporting Company

As a company with less than \$1.235 billion in revenue during our last fiscal year, we qualify as an “emerging growth company,” or “EGC,” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”). An EGC may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies. These provisions include, but are not limited to:

- being permitted to present only two years of audited financial statements and only two years of reduced related “Management’s discussion and analysis of financial condition and results of operations” disclosure incorporated by reference in this prospectus;
- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (the “Sarbanes-Oxley Act”), on the effectiveness of our internal controls over financial reporting;
- reduced disclosure obligations regarding executive compensation arrangements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We will remain an EGC until the earliest to occur of: (1) the last day of our fiscal year in which we have more than \$1.235 billion in annual revenue; (2) the date we qualify as a “large accelerated filer,” as defined under Rule 12b-2 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”); (3) the date on which we have issued, in any three-year period, more than \$1.0 billion in non-convertible debt securities; or (4) the last day of our fiscal year ending after the fifth anniversary of the completion of our initial public offering.

We have elected to take advantage of certain of the reduced disclosure obligations for EGCs in the registration statement of which this prospectus is a part and may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

The JOBS Act provides that an EGC can take advantage of an extended transition period for complying with new or revised accounting standards, until those standards apply to private companies. We have elected to use this extended transition period to enable us to comply with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date we (i) are no longer an EGC or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply with such new or revised accounting standards. Until the date that we are no longer an EGC or affirmatively and irrevocably opt out of the exemption provided by Section 7(a)(2)(B) of the Securities Act of 1933, as amended (the “Securities Act”), upon issuance of a new or revised accounting standard that applies to our financial statements and that has a different effective date for public and private companies, we will disclose the date on which adoption is required for non-EGCs and the date on which we will adopt the recently issued accounting standard. We are also a “smaller reporting company,” or “SRC,” and will continue to be an SRC so long as (i) the market value of our capital stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter or (ii) our annual revenue is less than \$100.0 million during our most recently completed fiscal year and the market value of our capital stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter. If we are a SRC at the time we cease to be an EGC, we may continue to rely on exemptions from certain disclosure requirements that are available to SRCs. Specifically, as an SRC, we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and we are not required to comply with the auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act and, similar to EGCs, SRCs have reduced disclosure obligations regarding executive compensation.

The Offering

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| Common stock offered by the Selling Stockholders | 9,231,092 Shares, which includes (i) 4,000,002 outstanding Initial Shares held by certain of the Selling Stockholders and (ii) 5,231,090 Warrant Shares. See the “ <i>Selling Stockholders</i> ” section of this prospectus. |
| Use of proceeds | We will not receive any proceeds from the sale of the Shares. See “Use of Proceeds.” |
| National Securities Exchange Listing | Our common stock is listed on The Nasdaq Global Market under the symbol “MAZE.” |
| Risk Factors | You should read the section entitled “Risk Factors” in this prospectus for a discussion of factors to consider carefully before deciding to invest in shares of our common stock. In addition, before deciding whether to invest, you should consider carefully the risks and uncertainties described in the section captioned “Risk Factors” contained in the 2024 Form 10-K and in the Q2 2025 Form 10-Q, and the information incorporated by reference herein. |

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before making your decision to invest in shares of our common stock, you should carefully consider the risks described below, together with the other information contained in this prospectus or incorporated herein by reference, including in the section titled “Special note regarding forward-looking statements” and the consolidated financial statements and related notes, and the risks and uncertainties discussed under “Risk Factors” in Part I, Item 1A of the 2024 Form 10-K and in Part II, Item 1A of the Q2 2025 Form 10-Q, which are incorporated by reference herein in their entirety. The risks and uncertainties described below or incorporated herein by reference are not the only ones we face. Additional risks and uncertainties that we are unaware of or that we deem immaterial may also become important factors that adversely affect our business. We cannot assure you that any of the events discussed below will not occur. These events could have a material and adverse impact on our business, financial condition, results of operations and prospects. If that were to happen, the trading price of our common stock could decline, and you could lose all or part of your investment.

Risks Related to This Offering

A sale of a substantial amount of shares of our common stock may cause the price of our common stock to decline.

We are registering for resale up to 9,231,092 shares of our common stock held by, or issuable upon the exercise of Pre-Funded Warrants held by, the Selling Stockholders, which is a significant number of shares compared to the current number of total shares of common stock issued and outstanding. We cannot predict if and when the Selling Stockholders may sell such shares and what effect, if any, sales of our shares in the public market or the availability of shares for sale will have on the market price of our common stock. However, future sales of substantial amounts of our common stock in the public market, or the perception that such sales may occur, could adversely affect the market price of our common stock.

In addition, to raise capital, we may sell common stock, convertible securities or other equity-linked securities in one or more transactions at prices and in a manner we determine from time to time. To the extent that additional capital is raised through the sale and issuance of shares of our common stock or other securities convertible into shares of our common stock, our stockholders will be diluted. These sales, or the perception in the market that the holders of a large number of shares of our common stock intend to sell shares, could reduce the market price of our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and documents incorporated herein by reference contain “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. In some cases, you can identify forward-looking statements by terms such as “believe,” “may,” “will,” “potentially,” “estimate,” “continue,” “anticipate,” “intend,” “could,” “would,” “project,” “plan,” “expect” and similar expressions that convey uncertainty of future events or outcomes, although not all forward-looking statements contain these words. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in “Risk Factors”, in the 2024 Form 10-K, in the Q2 2025 Form 10-Q and elsewhere in this prospectus, the documents incorporated by reference into this prospectus and any free writing prospectus. Moreover, we operate in a competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. The forward-looking statements in this prospectus include, among other things, statements about:

- the timing of our preclinical studies and clinical trials for our therapeutic candidates, including statements regarding the anticipated timing of initiation and completion of studies or trials, the period during which the results of the trials will become available and our development plans;
- the characteristics, safety, tolerability and efficacy of MZE829, MZE782 or any other therapeutic candidates we may develop;
- our ability to develop, obtain and maintain regulatory approval for our therapeutic candidates or any other therapeutic candidates we may develop, including the timing of and costs involved;
- estimates of our addressable market and market growth, including our estimates regarding the patient populations and market opportunities for our therapeutic candidates;
- our expectations regarding demand for, and market acceptance of, our therapeutic candidates in any of the indications in which we plan to develop them, and any other therapeutic candidates we may develop;
- our ability to use our Compass platform to identify new therapeutic targets and advance such targets into clinical development and validate such targets across multiple indications;
- our ability to maintain and expand access to human genetics data;
- our ability to compete effectively with existing competitors and new market entrants;
- the potential effects of extensive government regulations in the United States and foreign countries relating to our industry;
- our ability to obtain, maintain, protect and enforce intellectual property and proprietary rights;
- our ability to operate our business without infringing, misappropriating or otherwise violating the intellectual property rights and proprietary technology of third parties;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements, including our ability to comply with our financial obligations pursuant to the terms of such agreements;
- the timing and likelihood of the achievement of milestones pursuant to our existing collaboration and licensing agreements;
- our reliance on and performance of third parties, including our clinical research organizations, contract manufacturing organizations, suppliers and manufacturers;

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- our ability to expand our pipeline of therapeutic candidates;
- our ability to attract and retain key management and technical personnel;
- general economic, industry and market conditions, including fluctuating interest, inflation and tariff rates, uncertainty with respect to the federal debt ceiling and budget and the related potential for government shutdowns, uncertainty with respect to healthcare policies and regulation, instability in the global banking system, volatile market conditions, supply chain delays, and the ongoing labor shortage;
- the impact of natural disasters, terrorist activity, pandemics, regional conflicts around the world and the global responses thereto and other events beyond our control on any of the above or any other aspect of our business operations;
- our expectations regarding the period during which we will qualify as an emerging growth company under the JOBS Act; and
- our expectations regarding expenses, future revenue, capital requirements, and our needs for additional financing.

The forward-looking statements made in this prospectus relate only to events or information as of the date on which the statements are made in this prospectus. You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this prospectus to conform these statements to actual results or to changes in our expectations, except as required by law.

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

USE OF PROCEEDS

The proceeds from the sale of the Shares offered pursuant to this prospectus are solely for the accounts of the Selling Stockholders. Accordingly, we will not receive any of the proceeds from the sale of the Shares offered by this prospectus. See “*Selling Stockholders*” and “*Plan of Distribution*” below.

The Selling Stockholders may sell the Shares directly through purchasers or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions. The Selling Stockholders may sell the Shares at any time at market prices prevailing at the time of sale or at privately negotiated prices. The Selling Stockholders will bear all underwriting fees, commissions and discounts, if any, attributable to the sales of Shares and any transfer taxes.

SELLING STOCKHOLDERS

The Shares consist of (i) outstanding shares held by certain of the Selling Stockholders and (ii) Warrant Shares issuable to certain of the Selling Stockholders upon the exercise of the Pre-Funded Warrants. Pursuant to that certain Registration Rights Agreement, dated as of September 10, 2025 by and among us and the Selling Stockholders (the “Registration Rights Agreement”), we have agreed to file a registration statement with the SEC covering the resale of shares of our capital stock, and this registration statement has been filed pursuant to the Registration Rights Agreement.

The table below lists the Selling Stockholders and other information regarding their beneficial ownership (as determined under Section 13(d) of the Exchange Act and the rules and regulations thereunder) of our common stock as of September 30, 2025. Under Section 13(d) of the Exchange Act, beneficial ownership generally includes voting or investment power with respect to securities, including any securities that grant the holder the right to acquire shares of common stock within 60 days of the date of determination. These shares are deemed to be outstanding for the purpose of computing the percentage ownership of the person holding those securities, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. The percentage ownership data is based on 48,076,885 shares of our common stock issued and outstanding as of September 30, 2025, after giving effect to the issuance of the Initial Shares in the Private Placement. The Pre-Funded Warrants cannot be exercised by a Pre-Funded Warrant holder if, after giving effect thereto, such holder would beneficially own more than 4.99% or 9.99%, at the holder’s election, of our outstanding common stock (the “Beneficial Ownership Limitation”). Beneficial ownership as reflected in the Selling Stockholder table reflects the total number of shares potentially issuable underlying the Pre-Funded Warrants and does not give effect to the Beneficial Ownership Limitation. The actual number of shares of common stock beneficially owned by each selling stockholder, if determined in accordance with the rules of the SEC, may be lower than the amounts reflected in the table.

We have prepared the table below based on information furnished to us by or on behalf of the Selling Stockholders. The second column of the table lists the number of shares of common stock beneficially owned by the Selling Stockholders as of September 30, 2025, irrespective of any applicable the Beneficial Ownership Limitation. The third column of the table lists the Shares being offered under this prospectus by the Selling Stockholders or those persons or entities to whom they transfer, donate, devise, pledge or distribute their Shares or by other successors in interest, irrespective of any applicable Beneficial Ownership Limitation. The fourth column of the table assumes the sale of all of the Shares offered by the Selling Stockholders pursuant to this prospectus and the resulting beneficial ownership percentage in the fifth column assumes the full exercise (irrespective of any applicable Beneficial Ownership Limitation) and sale in this offering of all shares of our common stock issuable upon exercise of the Pre-Funded Warrants held by the Selling Stockholder, but not by any other Pre-Funded Warrant holder.

Because, among other things, the exercise of the Pre-Funded Warrants is at the option of the holders, the number of Warrant Shares that will actually be issued to the Selling Stockholders pursuant to the Pre-Funded Warrants may be more or less than the number of Shares being offered by this prospectus. In addition, the Shares may be sold pursuant to this prospectus or in privately negotiated transactions. See “*Plan of Distribution*.” Because the Selling Stockholders may sell all, some or none of their Shares in this offering and because there are currently no agreements, arrangements or undertakings with respect to the sale of any of the Shares, we cannot estimate the number of Shares the Selling Stockholders will sell under this prospectus.

To our knowledge, none of the Selling Stockholders has, or during the three years prior to the date of this prospectus has had, any position, office or other material relationships with us or any of our affiliates, except as noted in the footnotes below, and except that (i) we and each Selling Stockholder are party to the Purchase Agreement and Registration Rights Agreement, (ii) Jamie Brush, a General Partner and Portfolio Manager with Frazier Life Sciences, served on our Board of Directors from November 2024 until January 2025 and (iii) certain Selling Stockholders have purchased securities from us in our November 2024 private offering and our January 2025 initial public offering.

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Unless otherwise indicated in the footnotes below, we believe that the Selling Stockholders have the sole voting and investment power with respect to all shares of our common stock beneficially owned by them. Since the date on which they provided the information below, the Selling Stockholders may have sold, transferred or otherwise disposed of some or all of their Shares in transactions exempt from the registration requirements of the Securities Act.

| Name of Selling Stockholders | Beneficial ownership before the offering | Number of shares of common stock being offered by Selling Stockholders | Beneficial ownership after the offering | |
|--|---|---|--|-------|
| | Number of shares of common stock | | Number of shares of common stock | % |
| Entities Affiliated with Baker Brothers (1) | 1,538,556 | 1,538,556 | — | — |
| Entities Affiliated with Deep Track (2) | 5,487,466 | 1,538,556 | 3,948,910 | 7.96% |
| Entities Affiliated with Driehaus (3) | 378,015 | 184,615 | 193,400 | * |
| Frazier Life Sciences X, L.P. (4) | 130,262 | 54,280 | 75,982 | * |
| Frazier Life Sciences XI, L.P. (5) | 293,558 | 144,532 | 149,026 | * |
| Frazier Life Sciences XII, L.P. (6) | 252,231 | 252,231 | — | — |
| Frazier Life Sciences Public Fund, L.P. (7) | 4,667,919 | 1,315,004 | 3,352,915 | 6.79% |
| Frazier Life Sciences Public Overage Fund, L.P. (8) | 1,377,282 | 387,931 | 989,351 | 2.04% |
| Entities Affiliated with Janus Henderson (9) | 3,237,943 | 1,230,769 | 2,007,174 | 4.17% |
| Logos Opportunities Fund IV LP (10) | 1,227,300 | 615,386 | 611,914 | 1.27% |
| TCG Crossover Fund II, L.P. (11) | 615,386 | 615,386 | — | — |
| Entities Affiliated with Venrock Healthcare Capital Partners (12) | 1,230,769 | 1,230,769 | — | — |
| Entities Affiliated with Vida Ventures (13) | 567,288 | 123,077 | 444,211 | * |

* Represents beneficial ownership of less than one percent of the outstanding shares of our common stock.

- (1) The reported securities were all acquired in the Private Placement and consist of the following: (i) 129,920 shares of our common stock issuable upon the exercise of warrants directly held by 667, L.P. (“**667**”); and (ii) 1,408,636 shares of our common stock issuable upon the exercise of warrants directly held by Baker Brothers Life Sciences, L.P. (together with 667, the “**Baker Funds**”), subject to the Beneficial Ownership Limitation. Baker Bros. Advisors LP (“**BBA**”) is the management company and investment advisor to the Baker Funds and has sole voting and investment power with respect to these securities. Baker Bros. Advisors (GP) LLC (the “**BBA GP**”) is the sole general partner of BBA. Julian C. Baker and Felix J. Baker are managing members of the BBA GP. Julian C. Baker, Felix J. Baker, BBA and the BBA GP may be deemed to be beneficial owners of the securities directly held by the Baker Funds. Julian C. Baker, Felix J. Baker, BBA and the BBA GP disclaim beneficial ownership of all securities held by the Baker Funds, except to the extent of their pecuniary interest therein. The business address of BBA, BBA GP, Julian C. Baker and Felix J. Baker is 860 Washington Street, 3rd Floor, New York, NY 10014.
- (2) The reported securities consist of the following: (i) 3,948,910 shares of our common stock directly held by Deep Track Biotechnology Master Fund, Ltd. (“**DTB Master Fund**”); (ii) 769,278 shares of our common stock issuable upon the exercise of warrants directly held by DTB Master Fund, which were acquired in the Private Placement; and (iii) 769,278 shares of our common stock issuable upon the exercise of warrants directly held by Deep Track Special Opportunities Fund, LP (together with DTB Master Fund, the “**Deep Track Funds**”), which were acquired in the Private Placement. Deep Track Capital, LP (“**Deep Track Investment Manager**”) serves as the investment manager of the Deep Track Funds, and Deep Track Capital GP, LLC (“**Deep Track GP**”) is the general partner of the Deep Track Investment Manager. David Kroin serves as the managing member of Deep Track GP. Accordingly, each of Deep Track Investment Manager, Deep Track GP, and David Kroin may be deemed exercise voting and investment discretion with respect to securities directly held by the Deep Track Funds. The business address of each of the aforementioned parties is 200 Greenwich Avenue, 3rd Floor, Greenwich, Connecticut 06830.

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- (3) The reported securities consist of the following: (i) an aggregate 277,890 shares of our common stock directly held by Driehaus Life Sciences Master Fund, L.P. (“**DLS Master Fund**”), including 135,692 shares acquired in the Private Placement; and (ii) an aggregate 100,125 shares of our common stock directly held by Driehaus Life Sciences (QP) Fund, L.P. (together with DLS Master Fund, the “**Driehaus Funds**”), including 48,923 acquired in the Private Placement. Driehaus Capital Management LLC (“**Driehaus Investment Advisor**”) serves as the investment advisor of the Driehaus Funds, and Driehaus Capital Management (USVI) LLC (“**Driehaus GP**”) is the general partner of the Driehaus Funds. Accordingly, each of Driehaus Investment Advisor and Driehaus GP may be deemed to beneficially own securities directly held by the Driehaus Funds. Driehaus Investment Advisor exercises its voting and investment powers through its portfolio managers, Michael Caldwell and Alex Munns, each of whom disclaims beneficial ownership of the securities held by the Driehaus Funds. The business address of each of the aforementioned parties is c/o Driehaus Capital Management LLC, 25 East Erie Street, Chicago, Illinois 60611.
- (4) The reported securities consist of the following: (i) 75,982 shares of our common stock directly held by Frazier Life Sciences X, L.P. (“**FLS X**”); and (ii) 54,280 shares of our common stock issuable upon the exercise of warrants directly held by FLS X, which were acquired in the Private Placement. The general partner of FLS X is FHMLS X, L.P., and its general partner is FHMLS X, L.L.C. Patrick J. Heron and James N. Topper are the members of FHMLS X, L.L.C. and as such exercise shared voting and investment discretion with respect to securities directly held by FLS X. The business address of each of the aforementioned parties is 1001 Page Mill Road, Building 4, Suite B, Palo Alto, California 94304.
- (5) The reported securities consist of the following: (i) 149,026 shares of our common stock directly held by Frazier Life Sciences XI, L.P. (“**FLS XI**”); and (ii) 144,532 shares of our common stock issuable upon the exercise of warrants directly held by FLS XI, which were acquired in the Private Placement. The general partner of FLS XI is FHMLS XI, L.P., and its general partner is FHMLS XI, L.L.C., which is managed by an investment committee of three that acts by majority vote. Accordingly, no members of such committee are attributed beneficial ownership of the securities directly held by FLS XI. The business address of each of the aforementioned parties is 1001 Page Mill Road, Building 4, Suite B, Palo Alto, California 94304.
- (6) The reported securities consist of 252,231 shares of our common stock issuable upon the exercise of warrants directly held by Frazier Life Sciences XII, L.P. (“**FLS XII**”), which were acquired in the Private Placement. The general partner of FLS XII is FHMLS XII, L.P., and its general partner is FHMLS XII, L.L.C., which is managed by an investment committee of three that acts by majority vote. Accordingly, no members of such committee are attributed beneficial ownership of the securities directly held by FLS XII. The business address of each of the aforementioned parties is 1001 Page Mill Road, Building 4, Suite B, Palo Alto, California 94304.
- (7) The reported securities consist of the following: (i) 3,352,915 shares of our common stock directly held by Frazier Life Sciences Public Fund, L.P. (“**FLSPF**”); and (ii) 1,315,004 shares of our common stock issuable upon the exercise of warrants directly held by FLSPF, which were acquired in the Private Placement. The general partner of FLSPF is FHMLS P, L.P., and its general partner is FHMLS P, L.L.C., which is managed by an investment committee of four that acts by majority vote. Accordingly, no members of such committee are attributed beneficial ownership of the securities directly held by FLSPF. Jamie Brush is affiliated with Frazier Life Sciences and served on our board of directors from November 2024 until the completion of our initial public offering in January 2025, and FLSPF and FLSP Overage purchased shares of our Series D preferred stock in our November 2024 preferred offering, prior to our initial public offering. See the section titled “*Certain Relationships and Related Party Transactions – Series D Preferred Stock and Series D-1 Preferred Stock Financing*” in our registration statement filed on Form S-1 (File No. 333-284164), made effective on January 30, 2025, for more information, and such disclosure is hereby incorporated by reference in this prospectus. The business address of each of the aforementioned parties is 1001 Page Mill Road, Building 4, Suite B, Palo Alto, California 94304.
- (8) The reported securities consist of the following: (i) 989,351 shares of our common stock directly held by Frazier Life Sciences Public Overage Fund, L.P. (“**FLSP Overage**”); and (ii) 387,931 shares of our common stock issuable upon the exercise of warrants directly held by FLSP Overage, which were acquired in the Private Placement. The general partner of FLSP Overage is FHMLS P Overage, L.P., and its general partner is FHMLS P Overage, L.L.C., which is managed by an investment committee of four that acts by majority

vote. Accordingly, no members of such committee are attributed beneficial ownership of the securities directly held by FLSP Overage. Mr. Brush is affiliated with Frazier Life Sciences and served on our board of directors from November 2024 until the completion of our initial public offering in February 2025, and FLSPF and FLSP Overage purchased shares of our Series D preferred stock in our November 2024 preferred offering, prior to our initial public offering. See the section titled “*Certain Relationships and Related Party Transactions – Series D Preferred Stock and Series D-1 Preferred Stock Financing*” in our registration statement filed on Form S-1 (file no. 333-284164) made effective on January 30, 2025 for more information, and such disclosure is hereby incorporated by reference in this prospectus. The business address of each of the aforementioned parties is 1001 Page Mill Road, Building 4, Suite B, Palo Alto, California 94304.

- (9) The reported securities consist of the following: (i) an aggregate 2,799,705 shares of our common stock directly held by Janus Henderson Biotech Innovation Master Fund Limited (“*Janus Master Fund*”), including 1,034,120 shares acquired in the Private Placement; and (ii) an aggregate 438,238 shares of our common stock directly held by Janus Henderson Biotech Innovation Master Fund II Limited (together with the Janus Master Fund, the “*Janus Funds*”), including 196,649 shares acquired in the Private Placement. Janus Henderson Investors US LLC (“*Janus*”), is an investment adviser registered under the Investment Advisers Act of 1940, as amended, that acts as investment adviser for each of the Janus Funds. Janus has the ability to make decisions with respect to the voting and disposition of the securities directly held by the Janus Funds subject to the oversight of the board of directors of each of the Janus Funds. Under the terms of its management contract with each of the Janus Funds, Janus has overall responsibility for directing the investments of each of the Janus Funds in accordance with the investment objective, policies, and limitations of each of the Janus Funds. Each of the Janus Funds has one or more portfolio managers appointed by and serving at the pleasure of Janus, and the portfolio managers may be deemed to exercise voting and investment discretion with respect to securities directly held by the Janus Funds. The portfolio managers for each of the Janus Funds are Andrew Acker, Daniel S. Lyons and Agustin Mohedas. The business address of each of the aforementioned parties is c/o Janus Henderson Investors US LLC, 151 Detroit Street, Denver, Colorado 80206.
- (10) The reported securities consist of an aggregate 1,227,300 shares of our common stock directly held by Logos Opportunities Fund IV LP (“*Logos IV*”), including 615,386 shares acquired in the Private Placement. Logos Opportunities IV GP LLC (“*Logos IV GP*”) is the general partner of Logos IV, and Arsani William and Graham Walmsley are the managing members of Logos IV GP. Mr. William has voting and dispositive power with respect to securities held of record by Logos IV and may be deemed to have beneficial ownership of such shares. The business address of each of the aforementioned is One Letterman Drive, Building C, Suite C3-350, San Francisco, California 94129.
- (11) The reported securities were all acquired in the Private Placement and are directly held by TCG Crossover Fund II, L.P. (“*TCG Crossover II*”). TCG Crossover GP II, LLC (“*TCGX GP*”) is the general partner of TCG Crossover II and Chen Ming Yu is the sole managing member of TCGX GP. As such, each of TCGX GP and Mr. Yu may be deemed to exercise voting and investment discretion with respect to securities directly held by TCG Crossover II. The business address for each of the aforementioned parties is c/o TCG Crossover Management, LLC, 245 Lytton Avenue, Suite 350, Palo Alto, California 94301.
- (12) The reported securities were all acquired in the Private Placement and consist of the following: (i) 947,938 shares of our common stock directly held by Venrock Healthcare Capital Partners EG, L.P. (“*VHCP EG*”); (ii) 257,108 shares of our common stock directly held by Venrock Healthcare Capital Partners III, L.P. (“*VHCP III*”); and (iii) 25,723 shares of our common stock directly held by VHCP Co-Investment Holdings III, LLC (“*VHCP Co-Investment*”). VHCP Management EG, LLC (“*VHCPM EG*”) is the general partner of VHCP EG. VHCP Management III, LLC (“*VHCPM*”) is the general partner of VHCP III and the manager of VHCP Co-Investment, and Dr. Bong Koh and Nimish Shah are the voting members of VHCPM EG and VHCPM. As such, each of VHCPM EG, VHCPM, Dr. Koh, and Mr. Shah may be deemed to exercise voting and investment discretion with respect to securities directly held by VHCP EG, VHCP III, and VHCP Co-Investment. The business address of each of the aforementioned parties is 7 Bryant Park, 23rd Floor, New York, New York 10018.

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- (13) The reported securities consist of the following: (i) an aggregate 565,983 shares of our common stock directly held by Vida Ventures III, L.P. (“**Vida III**”), including 122,794 shares acquired in the Private Placement; and (ii) an aggregate 1,305 shares of our common stock directly held by Vida Ventures III-A, L.P. (“**Vida III-A**” and together with Vida III, the “**Vida Funds**”), including 283 shares acquired in the Private Placement. Vida Ventures GP III, L.L.C. (“**Vida III GP**”) is the general partner of each of the Vida Funds and may be deemed to have voting, investment and dispositive power with respect to these securities. Arie Beldegrun, Helen Kim and Rajul Jain are the members of the investment committee of Vida III GP (each, a “**Vida III Investment Committee Member**” and such committee, the “**Vida III Investment Committee**”). The Vida III Investment Committee and each of the Vida III Investment Committee Members may be deemed to share voting, investment and dispositive power with respect to these securities. Each of Vida III GP, the Vida III Investment Committee and each of the Vida III Investment Committee Members disclaims beneficial ownership of the securities held of record by Vida III and Vida III-A, except to the extent of their pecuniary interest therein, if any. The business address of each of the aforementioned parties is 10100 Santa Monica Boulevard, Suite 1500, Los Angeles, California 90067.

PLAN OF DISTRIBUTION

The Selling Stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling Shares or interests in Shares received after the date of this prospectus from a Selling Stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their Shares or interests in Shares on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The Selling Stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- distributions to members, partners, stockholders or other equityholders of the Selling Stockholders;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales and settlement of short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- “at the market” to or through market makers or into an existing market for the shares;
- in other ways not involving market makers or established trading markets, including direct sales to purchasers or sales effected through agents;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The Selling Stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act, amending the list of Selling Stockholders to include the pledgee, transferee or other successors in interest as Selling Stockholders under this prospectus. The Selling Stockholders also may transfer the Shares in other circumstances, in which case the transferees, pledgees or other successors in interest will be the Selling Stockholders for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The Selling Stockholders may also sell Shares short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative

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securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the Selling Stockholders from the sale of the Shares offered by them will be the purchase price of the Shares less discounts or commissions, if any. Each of the Selling Stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the Pre-Funded Warrants by payment of cash, however, we will receive the exercise price of the Pre-Funded Warrants.

The Selling Stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule, or another available exemption from the registration requirements under the Securities Act.

The Selling Stockholders and any underwriters, broker-dealers or agents that participate in the sale of the Shares or interests therein may be “underwriters” within the meaning of Section 2(a)(11) of the Securities Act (it being understood that the Selling Stockholders shall not be deemed to be underwriters solely as a result of their participation in this offering). Any discounts, commissions, concessions or profit they earn on any resale of the Shares may be underwriting discounts and commissions under the Securities Act. Selling Stockholders who are “underwriters” within the meaning of Section 2(a)(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the Shares to be sold, the names of the Selling Stockholders, the respective purchase prices and public offering prices, the names of any agent, dealer or underwriter, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

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

We have advised the Selling Stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of Shares in the market and to the activities of the Selling Stockholders and their affiliates. In addition, to the extent applicable, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the Selling Stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The Selling Stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

We have agreed to indemnify the Selling Stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the Selling Stockholders to use commercially reasonable efforts to cause the registration statement of which this prospectus constitutes a part to become effective and to remain continuously effective until the earlier of: (i) the date on which the Selling Stockholders shall have resold or otherwise disposed of all the Shares covered by this prospectus and (ii) the date on which the Shares covered by this prospectus no longer constitute “Registrable Securities” as such term is defined in the Registration Rights Agreement, such that they may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations and without current public information pursuant to Rule 144 under the Securities Act or any other rule of similar effect.

DESCRIPTION OF CAPITAL STOCK

The following description summarizes the most important terms of our capital stock. Because it is only a summary, it does not contain all the information that may be important to you. For a complete description, you should refer to our amended and restated certificate of incorporation and amended and restated bylaws, which are included as exhibits to the registration statement of which this prospectus forms a part, and to the applicable provisions of applicable Delaware law.

General

Our authorized capital stock consists of 500,000,000 shares of our common stock, \$0.001 par value per share, and 10,000,000 shares of our undesignated preferred stock, \$0.001 par value per share.

Common stock

As of September 30, 2025, there were 48,076,885 shares of our common stock outstanding.

Dividend rights

Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of our common stock are entitled to receive dividends out of funds legally available if our board of directors, in its discretion, determines to issue dividends and then only at the times and in the amounts that our board of directors may determine.

Voting rights

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders. We have not provided for cumulative voting for the election of directors in our restated certificate of incorporation, which means that holders of a majority of the shares of our common stock are able to elect all of our directors. Our amended and restated certificate of incorporation provides for a classified board of directors, divided into three classes with staggered three-year terms. Only one class of electors is elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms.

No preemptive or similar rights

Our common stock is not entitled to preemptive rights, and is not subject to conversion, redemption or sinking fund provisions.

Right to receive liquidation distributions

Upon our liquidation, dissolution or winding-up, the assets legally available for distribution to our stockholders would be distributable ratably among the holders of our common stock and any participating preferred stock outstanding at that time, subject to prior satisfaction of all outstanding debt and liabilities and the preferential rights of and the payment of liquidation preferences, if any, on any outstanding shares of our preferred stock.

Preferred stock

No shares of our preferred stock are outstanding. Pursuant to our amended and restated certificate of incorporation, our board of directors is authorized, subject to limitations prescribed by Delaware law, to issue preferred stock in one or more series, to establish from time to time the number of shares to be included in each

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series and to fix the designation, powers, preferences and rights of the shares of each series and any of their qualifications, limitations or restrictions, in each case without further vote or action by our stockholders. Our board of directors is authorized to increase or decrease the number of shares of any series of preferred stock, but not below the number of shares of that series then outstanding and not above the number of shares of that series authorized, without any further vote or action by our stockholders. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of our company and might adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. We have no current plan to issue any shares of preferred stock.

Stock Options

As of September 30, 2025, we had outstanding stock options to purchase an aggregate of 5,749,020 shares of our common stock with a weighted-average exercise price of \$11.21 per share.

Restricted Stock Units

As of September 30, 2025, we had outstanding 594,825 restricted stock units.

Warrants

As of September 30, 2025, 5,231,090 shares of our common stock were issuable upon exercise of the Pre-Funded Warrants with an exercise price of \$0.001 per share.

Registration Rights

Pursuant to the terms of the Amended and Restated Investors' Rights Agreement, dated November 26, 2024, by and among us and certain of our stockholders (the "IRA"), certain holders of our common stock are entitled to rights with respect to the registration of these shares under the Securities Act as described below. We refer to these shares collectively as "registrable securities".

Demand Registration Rights

Certain holders of not less than 25% of the then-outstanding registrable securities may make a request to us for the registration under the Securities Act of at least 25% of the registrable securities then outstanding if the anticipated aggregate offering price is at least \$60.0 million. Within ten days after the date such request is given, we are obligated to provide notice of such request to all holders of registrable securities and, as soon as practicable and in any event within 60 days after the date such request is given, to file a Form S-1 registration statement under the Securities Act covering all registrable securities that the initiating holders requested to be registered and any additional registrable securities requested to be included in such registration by any other holders. We are only required to file two registration statements that are declared effective upon exercise of these demand registration rights. We may postpone taking action with respect to such filing not more than once during any 12-month period for a total period of not more than 120 days, if after receiving a request for registration, we furnish to the holders requesting such registration a certificate signed by our Chief Executive Officer stating that, in the good faith judgment of our board of directors, it would be materially detrimental to us and our stockholders; *provided that* we may not register any securities for our own account or that of any other stockholder during such 120-day period other than under certain circumstances.

Form S-3 Registration Rights

Certain holders of at least 10% of the then-outstanding registrable securities can request that we register all or part of their registrable shares on Form S-3 if we are eligible to file a registration statement on Form S-3 and if

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the aggregate price to the public of the shares offered, net of selling expenses, is at least \$30.0 million. Within ten days after such request is given, we are obligated to provide notice of such request to all holders of registrable securities and as soon as practicable and in any event within 45 days, file a Form S-3 registration statement, covering all registrable securities that the initiating holders requested to be registered and any additional registrable securities requested to be included in such registration by any other holders. We are only required to file two registration statements on Form S-3 that are declared effective in a 12-month period. We may postpone taking action with respect to such filing not more than once during any 12-month period for a period of not more than 120 days, if after receiving a request for registration, we furnish to the holders requesting such registration a certificate signed by our Chief Executive Officer stating that, in the good faith judgment of our board of directors, it would be materially detrimental to us and our stockholders; *provided that* we may not register any securities for our own account or that of any other stockholder during such 120-day period other than under certain circumstances.

Piggyback Registration Rights

If we register any of our securities for public sale, holders of then-outstanding registrable securities or their permitted transferees will have the right to include their registrable securities in the registration statement. However, this right does not apply to a registration related to any employee benefit plan or a corporate reorganization or other transaction covered by Rule 145 promulgated under the Securities Act or a registration on any form that does not include substantially the same information as would be required to be included in a registration statement covering the sale the registrable securities. The underwriters of any underwritten offering will have the right to limit the number of shares registered by these holders if they determine that marketing factors require limitation, in which case the number of shares to be registered will be apportioned pro rata among these holders, according to the total number of registrable securities originally requested by such holders to be included in the registration statement. However, the number of shares to be registered by these holders cannot be reduced unless all other securities (other than those sold by us) are entirely excluded first, and thereafter, that amount can only be reduced to 30% of the total number of securities to be included in such offering.

Expenses of Registration Rights

We will pay all expenses, other than underwriting discounts and selling commissions incurred in connection with each of the registrations described above, including the reasonable fees and disbursements of counsel (except for the fees and disbursements of one counsel selected by the holders of a majority in interest of the registrable securities and paid for by us), *provided however*, that the registrations described above are not subsequently withdrawn at the request of the holders of a majority in interest of the registrable securities (in which case all selling holders shall bear such expenses pro rata based upon the number of registrable securities that were to be included in the withdrawn registration) unless the holders of a majority of the registrable securities agree to forfeit their right to a registration as described above.

Expiration of Registration Rights

The registration rights described above will expire, with respect to any particular holder of these rights, on the earliest to occur of (i) such time after the completion of our initial public offering as the registrable securities held by such holder may be sold within any three-month period without restriction pursuant to Rule 144 or a similar exemption under the Securities Act or (iii) February 3, 2030, the fifth anniversary of our initial public offering.

Anti-takeover provisions

The provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of delaying, deferring or discouraging another person from acquiring control of our company. These provisions, which are summarized below, may have the effect of discouraging

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takeover bids. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

Delaware law

We are subject to Section 203 of the Delaware General Corporation Law (the “DGCL”). In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an interested stockholder for a period of three years following the date that such stockholder became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not the voting stock owned by the interested stockholder, (i) shares owned by persons who are directors and also executive officers and (ii) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66.67% of the outstanding voting stock that is not owned by the interested stockholder

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

Amended and restated certificate of incorporation and amended and restated bylaw provisions

Our amended and restated certificate of incorporation and our amended and restated bylaws include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of our company, including the following:

- *Board of directors vacancies.* Our amended and restated certificate of incorporation and amended and restated bylaws authorize only our board of directors to fill vacant directorships, including newly created seats. In addition, the number of directors constituting our board of directors is permitted to be set only by resolution adopted by a majority vote of our entire board of directors. These provisions prevent a stockholder from increasing the size of our board of directors and then gaining control of our board of directors by filling the resulting vacancies with its own nominees. This makes it more difficult to change the composition of our board of directors but promotes continuity of management.
- *Classified board.* Our amended and restated certificate of incorporation and amended and restated bylaws provide that our board of directors is classified into three classes of directors, each with staggered three-year terms. A third party may be discouraged from making a tender offer or otherwise attempting to obtain control of us as it is more difficult and time consuming for stockholders to replace a majority of the directors on a classified board of directors.

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- *Stockholder action; special meetings of stockholders.* Our amended and restated certificate of incorporation provides that our stockholders may not take action by written consent but may only take action at annual or special meetings of our stockholders. As a result, a holder controlling a majority of our capital stock would not be able to amend our amended and restated bylaws or remove directors without holding a meeting of our stockholders called in accordance with our amended and restated bylaws. Further, our amended and restated certificate of incorporation and amended and restated bylaws provide that special meetings of our stockholders may be called only by a majority of our board of directors, the chairperson of our board of directors, our Chief Executive Officer or our President, thus prohibiting a stockholder from calling a special meeting. These provisions might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.
- *Advance notice requirements for stockholder proposals and director nominations.* Our amended and restated bylaws provide advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders. Our amended and restated bylaws also specify certain requirements regarding the form and content of a stockholder's notice. These provisions might preclude our stockholders from bringing matters before our annual meeting of stockholders or from making nominations for directors at our annual meeting of stockholders if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.
- *No cumulative voting.* The DGCL provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. Our amended and restated certificate of incorporation and amended and restated bylaws do not provide for cumulative voting.
- *Directors removed only for cause.* Our amended and restated certificate of incorporation provides that stockholders may remove directors only for cause and only by the affirmative vote of the holders of at least two-thirds of our outstanding common stock.
- *Amendment of charter provisions.* Any amendment of the above provisions in our amended and restated certificate of incorporation require approval by the holders of at least two-thirds of our outstanding common stock, unless such amendments are approved by two-thirds of our entire board of directors, in which case stockholders can approve by a simple majority.
- *Issuance of undesignated preferred stock.* Our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of undesignated preferred stock with rights and preferences, including voting rights, designated from time to time by our board of directors. The existence of authorized but unissued shares of preferred stock would enable our board of directors to render more difficult or discourage an attempt to obtain control of us by merger, tender offer, proxy contest or other means.
- *Choice of forum.* Our amended and restated certificate of incorporation provides that, to the fullest extent permitted by law, the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the DGCL, our amended and restated certificate of incorporation or our amended and restated bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Our amended and restated certificate of incorporation also provides that the federal district courts of the United States of America are, to the fullest extent permitted by law, the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act (a "Federal Forum Provision"). Our decision to adopt a Federal Forum Provision followed a decision by the Supreme Court of the State of Delaware holding that such provisions are facially valid under Delaware law. While there can be no assurance that federal courts or state courts will follow the holding of the Delaware Supreme Court or determine that the Federal

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Forum Provision should be enforced in a particular case, application of the Federal Forum Provision means that suits brought by our stockholders to enforce any duty or liability created by the Securities Act must be brought in federal court and cannot be brought in state court. While neither the exclusive forum provision nor the Federal Forum Provision applies to suits brought to enforce any duty or liability created by the Exchange Act, Section 27 of the Exchange Act creates exclusive federal jurisdiction over all claims brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. Accordingly, actions by our stockholders to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder also must be brought in federal court. Our stockholders will not be deemed to have waived our compliance with the federal securities laws and the regulations promulgated thereunder. Any person or entity purchasing or otherwise acquiring or holding any interest in any of our securities shall be deemed to have notice of and consented to our exclusive forum provisions, including the Federal Forum Provision. These provisions may limit a stockholder's ability to bring a claim in a judicial forum of their choosing for disputes with us or our directors, executive officers, other employees or agents of our company, which may discourage lawsuits against us and our directors, executive officers, and other employees.

Transfer agent and registrar

The transfer agent and registrar for our common stock is Equiniti Trust Company, LLC. The transfer agent's address is 28 Liberty Street, Floor 53, New York, New York 10043.

The Nasdaq Global Market listing

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

LEGAL MATTERS

The validity of the issuance of our securities offered in this prospectus will be passed upon for us by Fenwick & West LLP, San Francisco, California.

EXPERTS

The financial statements of Maze Therapeutics, Inc. appearing in the Company's Annual Report (Form 10-K) for the years ended December 31, 2024 and 2023, and for each of the two years in the period ended December 31, 2024, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon, appearing therein, and incorporated herein by reference. Such 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.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

This prospectus, which constitutes a part of a registration statement we have filed with the SEC, does not contain all of the information set forth in the registration statement or the exhibits filed therewith. For further information about us and the common stock offered hereby, reference is made to the registration statement and the exhibits filed therewith. Statements contained in this prospectus concerning the contents of any contract or any other document are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement. The exhibits to the registration statement should be reviewed for the complete contents of these contracts and documents. The SEC also maintains an Internet website that contains the registration statement of which this prospectus forms a part, as well as the exhibits thereto. These documents, along with future reports, proxy statements and other information about us, are available at the SEC's website, www.sec.gov.

We are subject to the information and reporting requirements of the Exchange Act, and, in accordance with this law, file periodic reports and other information with the SEC. These periodic reports, proxy statements and other information are available for inspection and copying at the SEC's public reference facilities and the website of the SEC referred to above. We also maintain a website at www.mazetx.com. You may access these materials at our website free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. The information contained on, or that can be accessed through, our website is not part of, and is not incorporated into, this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus the information in documents we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus. Any statement contained in any document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in or omitted from this prospectus or any accompanying prospectus supplement modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We incorporate by reference the documents listed below; provided, however, we are not incorporating by reference any information furnished (but not filed) under Item 2.02 or Item 7.01 of any Current Report on Form 8-K:

- Our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2024, as filed with the SEC on March 31, 2025.
- Our Quarterly Reports on Form 10-Q for the quarters ended (i) June 30, 2025, as filed with the SEC on [August 12, 2025](#), and (ii) March 31, 2025, as filed with the SEC on [May 14, 2025](#).
- Our Current Reports on Form 8-K filed with the SEC on [September 2, 2025](#), [September 11, 2025](#), and [October 6, 2025](#).
- The description of our common stock contained in our registration statement on [Form 8-A](#) filed with the SEC on January 27, 2025 under Section 12 of the Exchange Act, including any amendment or report filed for the purpose of updating such description.

In addition, we incorporate by reference in this prospectus any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (excluding any information furnished and not filed with the SEC) after the date on which the registration statement that includes this prospectus was initially filed with the SEC (including all such documents we may file with the SEC after the date of the initial registration statement) until all offerings under this prospectus are terminated.

Upon written or oral request, we will provide without charge to each person, including any beneficial owner, to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference in this prospectus (other than exhibits to such documents unless such exhibits are specifically incorporated by reference in this prospectus). You may request a copy of these filings, at no cost, by writing or telephoning us at the following address: Maze Therapeutics, Inc., 171 Oyster Point Blvd., South San Francisco, California 94080, telephone: (650) 850-5070. You may also access these documents on our website at www.mazetx.com.

Information on our website, including subsections, pages, or other subdivisions of our website, or any website linked to by content on our website, is not part of this prospectus and you should not rely on that information unless that information is also in this prospectus or incorporated by reference in this prospectus.

Up to 9,231,092 shares of common stock



Maze Therapeutics, Inc.

PROSPECTUS

November 6, 2025
