

PROSPECTUS SUPPLEMENT

(to Prospectus dated April 11, 2024)

12,962,962 Shares**Common Stock**

We are offering 12,962,962 shares of our common stock in this offering.

Our common stock is listed on The Nasdaq Global Select Market under the symbol "MLYS." On March 11, 2025, the last reported sale price of our common stock on The Nasdaq Global Select Market was \$14.30 per share.

We are an "emerging growth company" and a "smaller reporting company" under the federal securities laws and are subject to reduced public company disclosure standards. See the section titled "Prospectus Supplement Summary—Implications of Being an Emerging Growth Company and a Smaller Reporting Company."

Investing in our common stock involves a high degree of risk. Please read "[Risk Factors](#)" beginning on page [S-5](#) of this prospectus supplement, on page 6 of the accompanying prospectus and the documents incorporated by reference into this prospectus supplement.

	Per Share	Total
Public offering price	\$ 13.50	\$ 174,999,987.00
Underwriting discounts and commissions ⁽¹⁾	\$ 0.81	\$ 10,499,999.22
Proceeds, before expenses, to us	\$ 12.69	\$ 164,499,987.78
Proceeds, before expenses, to the underwriters	\$ 0.81	\$ 10,499,999.22

(1) See "Underwriting" for a description of the compensation payable to the underwriters.

The underwriters may also exercise their option to purchase up to an additional 1,944,444 shares of common stock from us, at the public offering price, less the underwriting discount, for 30 days after the date of this prospectus.

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 shares will be ready for delivery on or about March 13, 2025.

BofA Securities

Evercore ISI

Goldman Sachs & Co. LLC

Stifel

Wells Fargo Securities

LifeSci Capital

H.C. Wainwright & Co.

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Neither we nor any of the underwriters have authorized anyone to provide information different from that contained in this prospectus supplement. When you make a decision about whether to invest in our common stock, you should not rely upon any information other than the information in this prospectus supplement. Neither the delivery of this prospectus supplement nor the sale of shares of our common stock means that information contained in this prospectus supplement is correct after the date of this prospectus supplement. This prospectus supplement is not an offer to sell or solicitation of an offer to buy shares of our common stock in any circumstances under which the offer or solicitation is unlawful.

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus dated April 11, 2024 are part of a registration statement that we filed with the Securities and Exchange Commission (SEC) utilizing a “shelf” registration process. This prospectus supplement and the accompanying prospectus relate to the offer by us of shares of our common stock to certain investors. We provide information to you about this offering of shares of our common stock in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific details regarding this offering; and (2) the accompanying prospectus, which provides general information, some of which may not apply to this offering. Generally, when we refer to this “prospectus,” we are referring to both documents combined. If information in this prospectus supplement is inconsistent with the accompanying prospectus, you should rely on this prospectus supplement. However, if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus supplement or the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates. You should read this prospectus supplement, the accompanying prospectus, the documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering when making your investment decision. You should also read and consider the information in the documents we have referred you to under the headings “Where You Can Find More Information; Incorporation by Reference.”

You should rely only on information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus and any free writing prospectus that we authorize. We and the underwriters have not, authorized anyone to provide you with information that is different. We are offering to sell and seeking offers to buy shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus supplement, the accompanying prospectus, the documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering are accurate only as of their respective dates, regardless of the time of delivery of this prospectus supplement or of any sale of our common stock.

In this prospectus supplement, unless the context otherwise indicates, the terms “Mineralys,” the “Company,” “we,” “our” and “us” or similar terms refer to Mineralys Therapeutics, Inc.

Mineralys, the Mineralys logo, and other trademarks or service marks of Mineralys appearing in this prospectus supplement are the property of Mineralys. This prospectus supplement and the accompanying prospectus also includes trademarks, tradenames and service marks that are the property of other organizations. Use or display by us of other parties’ trademarks, trade dress or products is not intended to and does not imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owner. Solely for convenience, trademarks and tradenames referred to in this prospectus supplement 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 that the applicable owner will not assert its rights, to these trademarks and tradenames.

PROSPECTUS SUPPLEMENT SUMMARY

The items in the following summary are described in more detail later in this prospectus supplement and in the accompanying prospectus. This summary provides an overview of selected information and does not contain all the information you should consider before investing in our common stock. Therefore, you should read the entire prospectus supplement, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering carefully, including the "Risk Factors" section, and other documents or information included or incorporated by reference in this prospectus supplement and the accompanying prospectus before making any investment decision.

Overview

We are a clinical-stage biopharmaceutical company focused on developing medicines to target diseases driven by dysregulated aldosterone. Our clinical-stage product candidate, lorundrostat, is a proprietary, orally administered, highly selective aldosterone synthase inhibitor (ASI) that we are developing for the treatment of cardiorenal conditions affected by dysregulated aldosterone, including hypertension, chronic kidney disease (CKD), and obstructive sleep apnea (OSA). In the United States, approximately 120 million patients have sustained elevated blood pressure (BP), or hypertension, and more than half of this population fails to achieve their BP goals, defined as BP below 130/80 mmHg, with currently available medications. There are over 30 million treated patients who do not achieve their BP goal, of whom approximately 20 million have systolic BP levels greater than 140 mmHg. Patients with hypertension that persists despite taking two or more medications have 1.8 and 2.5 times greater mortality risk due to either cardiovascular disease or stroke, respectively. In a Phase 2 proof-of-concept clinical trial evaluating 200 subjects (Target-HTN) with uncontrolled hypertension (uHTN), defined as individuals who are unable to achieve BP of below 130/80 mmHg despite taking two to five lines of antihypertensive medication, or resistant hypertension (rHTN), defined as individuals who are unable to achieve BP of below 130/80 mmHg despite taking three or more antihypertensive medications typically including a diuretic, lorundrostat demonstrated a clinically meaningful and statistically significant reduction in BP with once-daily (QD) dosing and was well tolerated. Dysregulated aldosterone levels are a key factor in driving hypertension in approximately 30% of hypertensive patients. In addition to hypertension, we are investigating the benefits of lorundrostat in subjects with hypertension and CKD and in subjects with hypertension and OSA. We believe that our product candidate holds promise to be an innovative solution for the rapidly growing unmet need in multiple cardiorenal metabolic disorders.

Recent Developments

On March 10, 2025, we announced positive topline data from our pivotal Launch-HTN Phase 3 and pivotal Advance-HTN Phase 2 trials evaluating the efficacy and safety of lorundrostat for the treatment uHTN or rHTN. Both trials successfully achieved statistical significance and were clinically meaningful in their pre-specified primary efficacy endpoints and demonstrated a favorable safety and tolerability profile.

Efficacy Results

The Launch-HTN trial was a global, randomized, double-blinded, placebo-controlled Phase 3 trial, which enrolled eligible adult participants who failed to achieve their blood pressure goal despite being on two to five antihypertensive medications. Launch-HTN reflects the real-world setting for clinicians by utilizing automated office blood pressure (AOBP) measurement and allowing participants to stay on their existing medications. The trial met its endpoints demonstrating clinically meaningful, statistically significant mean reduction from baseline in placebo-adjusted systolic blood pressure at week six and the benefit was sustained with potential further reduction through week 12.

Launch-HTN Phase 3 Trial <i>(automated office systolic blood pressure measure, n=1,083)</i>				
	Week 6 (50 mg pooled)		Week 12	
	Absolute Reduction	Placebo-Adjusted Reduction	Absolute Reduction	Placebo-Adjusted Reduction
50 mg	-16.9 mmHg	-9.1 mmHg (p<0.0001)*	-19.0 mmHg	-11.7 mmHg (p<0.0001)
50 to 100 mg			-15.7 mmHg	-8.4 mmHg (p=0.0016)

* Primary endpoint

- The change in blood pressure in response to lorundrostat in subjects using two background antihypertensives (uncontrolled) or three to five (resistant) were similar, and both were statistically significantly different from the response in those taking placebo.

Key characteristics of subjects enrolled in the Launch-HTN trial include: approximately 63% had a body mass index (BMI) greater than or equal to 30kg/m2, approximately 47% were women, and approximately 29% were Black or African American.

The Advance-HTN trial was a randomized, double-blind, placebo-controlled Phase 2 pivotal trial that evaluated the efficacy and safety of lorundrostat for the treatment of confirmed uHTN or rHTN, when used as add-on therapy to an optimized background treatment of two or three antihypertensive medications in adult subjects. The trial met its primary endpoint, with placebo-adjusted reduction from baseline in systolic blood pressure assessed with 24-hour average blood pressure measurement at week 12 of -7.9 mmHg in subjects treated with 50 mg of lorundrostat. Other prespecified outcome measures, including measures of efficacy in the dose-escalation cohort, safety and tolerability, were consistent with those observed in the Launch-HTN trial. Key characteristics of subjects enrolled in the Advance-HTN trial include: approximately 66% had a BMI greater than or equal to 30kg/m2, approximately 40% were women, and approximately 50% were Black or African American.

Additional details regarding the results from Advance-HTN are embargoed until presentation on March 29, 2025, at the American College of Cardiology Scientific Sessions.

Safety and Tolerability Results

We believe the clinical safety findings, including hypotension, serum potassium, eGFR and serum cortisol, from both pivotal trials, support a favorable benefit-risk profile.

- In the Launch-HTN trial there were 12 subjects (2.2%) and two subjects (0.7%) with treatment-emergent serious adverse events (SAEs) in the 50 mg and 50 mg with optional dose escalation to 100 mg arms, respectively, compared with eight subjects (3.0%) in the placebo arm. There was only one subject (0.1%) in the trial with treatment-related SAEs that occurred in the 50 mg arm.
- The incidence of hyperkalemia (serum potassium above 6.0 mmol/L) in the 50 mg and 50mg to 100mg arms, respectively, was 1.1% and 1.5% in the Launch-HTN trial and 5.3% and 7.4% in the Advance-HTN trial.

We believe the Advance-HTN and Launch-HTN results demonstrate the opportunity of lorundrostat in third line or later treatment.

The ongoing Transform-HTN open-label extension trial allows subjects to continue to receive lorundrostat and generate additional safety and efficacy data.

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

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012 (the JOBS Act). We may take advantage of certain exemptions from various public company reporting requirements,

including not being required to have our internal control over financial reporting audited by our independent registered public accounting firm under Section 404 of the Sarbanes-Oxley Act of 2002 reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and any golden parachute payments. We may take advantage of these exemptions until December 31, 2028 or until we are no longer an “emerging growth company,” whichever is earlier. We will cease to be an emerging growth company prior to the end of such period if certain earlier events occur, including if we become a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended (the Exchange Act), our annual gross revenues exceed \$1.235 billion or we issue more than \$1.0 billion of non-convertible debt in any three-year period.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to use this extended transition period under the JOBS Act until the earlier of the date we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act.

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company, which would allow us to take advantage of many of the same exemptions available to emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation. We will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than \$100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter.

Corporate Information

We were incorporated under the laws of the State of Delaware in May 2019 as Catalys SC1, Inc. and we subsequently changed our name to Mineralys Therapeutics, Inc. Our mailing address is 150 N. Radnor Chester Rd, Suite F200, Radnor, PA 19087 and our telephone number is 888-378-6240. The information on, or accessible through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus and should not be considered part of this prospectus supplement or the accompanying prospectus.

THE OFFERING

Common stock offered by us	12,962,962 shares.
Option to purchase additional shares	We have granted the underwriters an option to purchase up to an additional 1,944,444 shares of our common stock. This option is exercisable, in whole or in part, for a period of 30 days from the date of this prospectus supplement.
Common stock to be outstanding after this offering	62,784,877 shares (or 64,729,321 shares if the underwriters exercise in full their option to purchase additional shares).
Use of proceeds	We currently intend to use the net proceeds from this offering to fund clinical development of lorundrostat, including research and development and manufacturing, and pre-commercialization activities, as well as for working capital and general corporate purposes. See " Use of Proceeds ."
Risk factors	You should read the " Risk Factors " section of this prospectus supplement and in the documents incorporated by reference in this prospectus supplement for a discussion of factors to consider before deciding to invest in our common stock.
Nasdaq Global Select Market symbol	"MLYS"

The number of shares of common stock to be outstanding after this offering is based on 49,821,915 shares of our common stock outstanding as of December 31, 2024. The number of shares outstanding as of December 31, 2024 excludes:

- 4,560,292 shares of our common stock issuable upon exercise of stock options outstanding as of December 31, 2024 under our stock option plans as of that date, at a weighted average exercise price of \$11.76 per share;
- 2,510,030 shares of our common stock available as of December 31, 2024 for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants;
- 775,722 shares of our common stock available as of December 31, 2024 for future issuance under our employee stock purchase plan; and
- 549,755 shares of our common stock that are issuable upon the exercise of pre-funded warrants outstanding as of December 31, 2024, at an exercise price of \$0.001 per share.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise of outstanding options or warrants, no vesting or settlement of performance-based stock units, and no exercise by the underwriters of their option to purchase up to an additional 1,944,444 shares of our common stock.

In addition, the number of shares of our common stock to be outstanding immediately after this offering as shown above does not include the \$100.0 million of shares of our common stock that remain available for sale at December 31, 2024 under the ATM Equity Offering Sales Agreement (the Sales Agreement) with BofA Securities, Inc. and Evercore Group L.L.C. (the Agents) dated March 21, 2024. We have not sold any shares of our common stock under the Sales Agreement.

RISK FACTORS

You should consider carefully the risks described below and discussed under the section captioned "Risk Factors" contained in our Annual Report on Form 10-K for the year ended December 31, 2024 as updated by our subsequent filings under the Exchange Act, which are incorporated by reference in this prospectus supplement and the accompanying prospectus in their entirety, together with other information in this prospectus supplement, the accompanying prospectus and the information and documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering before you make a decision to invest in our common stock. If any of the following events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment. The risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also affect our business operations.

Risks Relating to this Offering

If you purchase shares of our common stock sold in this offering, you will experience immediate and substantial dilution in the net tangible book value of your shares. In addition, we may issue additional equity or convertible debt securities in the future, which may result in additional dilution to investors.

The offering price per share of common stock in this offering is considerably more than the net tangible book value per share of our outstanding common stock. As a result, investors purchasing shares of common stock in this offering will pay a price per share that substantially exceeds the value of our tangible assets after subtracting liabilities. Based upon the public offering price of \$13.50 per share, new investors will incur immediate dilution of \$7.84 per share based on the net tangible book value as of December 31, 2024. For a more detailed discussion of the foregoing, see the section titled "Dilution" below. To the extent outstanding stock options are exercised, there will be further dilution to new investors. In addition, to the extent we need to raise additional capital in the future and we issue additional shares of common stock or securities convertible or exchangeable for our common stock, our then existing stockholders may experience dilution and the new securities may have rights senior to those of our common stock offered in this offering.

In addition, pursuant to the Sales Agreement, we may issue and sell from time to time through the Agents shares of our common stock, in an aggregate amount not to exceed \$100.0 million. As of the date of this prospectus supplement, \$100.0 million of common stock remains available for sale under the Sales Agreement. To the extent that we sell additional shares of our common stock pursuant to the Sales Agreement subsequent to this offering, investors purchasing securities in this offering could experience further dilution.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering, including for any of the purposes described in the section titled "Use of Proceeds," and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management might not apply our net proceeds in ways that ultimately increase the value of your investment. We expect to use the net proceeds from this offering to fund clinical development of lorudrostat, including research and development and manufacturing, and pre-commercialization activities, as well as for working capital and general corporate purposes. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

Sales of a substantial number of shares of our common stock by our existing stockholders in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could significantly reduce the market price of our common stock and impair our ability to raise adequate capital through the sale of additional equity securities.

As of December 31, 2024, up to 8,395,799 shares of common stock that are either subject to outstanding options, pre-funded warrants or other rights or reserved for future issuance under our employee benefit plans will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, exercise limitations, and Rule 144 and Rule 701 under the Securities Act. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

Further, we filed a registration statement, which became effective on April 11, 2024, registering the resale of up to 8,888,924 shares of common stock held by certain of our stockholders. As a result of the registration statement, these stockholders are each able to freely sell some or all of their shares of our common stock. Any sales by these stockholders could have a material adverse effect on the trading price of our common stock.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein and therein, and any free writing prospectus that we have authorized for use in connection with this offering contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Exchange Act. All statements other than statements of historical facts contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein are forward-looking statements, including statements regarding our future results of operations and financial position, business strategy, research and development plans, the anticipated timing, costs, design, and conduct of our ongoing and planned preclinical studies and planned clinical trials for lorundrostat and any future product candidates, the timing and likelihood of regulatory filings and approvals for lorundrostat and any future product candidates, our ability to commercialize our product candidates, if approved, the potential to develop future product candidates, the potential benefits of strategic collaborations and our intent to enter into any strategic arrangements, the timing and likelihood of success, and plans and objectives of management for future operations and future results of anticipated product development efforts are forward-looking statements. These statements involve known and unknown risks, uncertainties, and other important factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by the forward-looking statements. This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein also contain estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this prospectus supplement and are subject to a number of risks, uncertainties and assumptions, which we discuss in greater detail in the documents incorporated by reference herein, including under the heading “Risk Factors.” The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained in this prospectus supplement, the accompanying prospectus or the documents incorporated by reference herein, whether as a result of any new information, future events, changed circumstances or otherwise. For all forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately \$164.2 million from the sale of shares of common stock offered by us in this offering, or approximately \$188.8 million if the underwriters exercise in full their option to purchase up to an additional 1,944,444 shares of common stock, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently intend to use the net proceeds of this offering to fund clinical development of lorundrostat, including research and development and manufacturing, and pre-commercialization activities, as well as for working capital and general corporate purposes.

Based on our current operating plan, we believe that the net proceeds from this offering, together with our existing cash, cash equivalents, and investments, will be sufficient to fund our operations for at least the next 12 months. We have based this estimate on assumptions that may prove to be incorrect, and we could use our available capital resources sooner than we currently expect.

The amounts and timing of our actual expenditures will depend on numerous factors, including the factors described under "[Risk Factors](#)" in this prospectus supplement and in the documents incorporated by reference herein, as well as the amount of cash used in our operations. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending the uses described above, we may invest the net proceeds from this offering in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

DILUTION

If you invest in our common stock in this offering, your interest will be diluted to the extent of the difference between the public offering price per share and the net tangible book value per share of our common stock after this offering. As of December 31, 2024, our net tangible book value was \$191.3 million, or \$3.84 per share, based on 49,821,915 shares outstanding. Our net tangible book value per share represents the amount of our total tangible assets reduced by the amount of our total liabilities, divided by the total number of shares of our common stock outstanding as of December 31, 2024. After giving effect to the issuance and sale in this offering by us of 12,962,962 shares of common stock at the public offering price of \$13.50 per share, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our net tangible book value as of December 31, 2024 would have been \$355.4 million, or \$5.66 per share. This represents an immediate increase of net tangible book value of \$1.82 per share to our existing stockholders and an immediate dilution of \$7.84 per share to new investors purchasing our common stock in this offering. The following table illustrates this per share dilution.

Public offering price per share		\$	13.50
Net tangible book value per share as of December 31, 2024	\$	3.84	
Increase per share attributable to investors purchasing shares in this offering	\$	<u>1.82</u>	
As adjusted net tangible book value per share, after giving effect to this offering		\$	<u>5.66</u>
Dilution per share to investors purchasing our common stock in this offering		\$	<u><u>7.84</u></u>

If the underwriters exercise in full their option to purchase up to an additional 1,944,444 shares of our common stock at the public offering price of \$13.50 per share, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value after this offering would be \$5.87 per share, representing an increase in net tangible book value of \$2.03 per share to our existing stockholders and immediate dilution of \$7.63 per share to new investors purchasing common stock in this offering.

The foregoing tables and calculations (other than net tangible book value calculations) are based on 49,821,915 shares of our common stock outstanding as of December 31, 2024. The number of shares outstanding as of December 31, 2024 excludes:

- 4,560,292 shares of our common stock issuable upon exercise of stock options outstanding as of December 31, 2024 under our stock option plans as of that date, at a weighted average exercise price of \$11.76 per share;
- 2,510,030 shares of our common stock available as of December 31, 2024 for future grant or issuance pursuant to our stock-based plans for employees, directors and consultants;
- 775,722 shares of our common stock available as of December 31, 2024 for future issuance under our employee stock purchase plan; and
- 549,755 shares of our common stock that are issuable upon the exercise of pre-funded warrants outstanding as of December 31, 2024, at an exercise price of \$0.001 per share.

To the extent that outstanding options or pre-funded warrants are exercised, you may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital by issuing equity or convertible debt securities, your ownership will be further diluted.

In addition, the number of shares of our common stock to be outstanding immediately after this offering as shown above does not include the \$100.0 million of shares of our common stock that remain available for sale as of December 31, 2024 under the Sales Agreement. We have not sold any shares of our common stock under the Sales Agreement.

UNDERWRITING

BofA Securities, Inc., Evercore Group L.L.C. and Goldman Sachs & Co. LLC are acting as representatives of each of the underwriters named below. Subject to the terms and conditions set forth in an underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the number of shares of common stock set forth opposite its name below.

<u>Underwriter</u>	<u>Number of Shares</u>
BofA Securities, Inc.	3,560,926
Evercore Group L.L.C.	2,849,259
Goldman Sachs & Co. LLC	2,492,778
Stifel, Nicolaus & Company, Incorporated	1,781,111
Wells Fargo Securities, LLC	1,068,148
LifeSci Capital, LLC	854,259
H.C. Wainwright & Co., LLC	356,481
Total	12,962,962

Subject to the terms and conditions set forth in the underwriting agreement, the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated.

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

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officer's certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commissions and Discounts

The representatives have advised us that the underwriters propose initially to offer the shares to the public at the public offering price set forth on the cover page of this prospectus and to dealers at that price less a concession not in excess of \$0.486 per share. After the initial offering, the public offering price, concession or any other term of the offering may be changed.

The following table shows the public offering price, underwriting discount and proceeds before expenses to us. The information assumes either no exercise or full exercise by the underwriters of their option to purchase additional shares.

	Per Share	Without Option	With Option
Public offering price	\$ 13.50	\$ 13.50	\$ 13.50
Underwriting discount	\$ 0.81	\$ 0.81	\$ 0.81
Proceeds, before expenses, to us	\$ 12.69	\$ 164,499,987.78	\$ 189,174,982.14

The expenses of the offering, not including the underwriting discount and certain of our offering expenses reimbursed by the underwriters, are estimated at \$340,000 and are payable by us. We have also agreed to reimburse the underwriters for their expenses relating to clearance of this offering with the Financial Industry Regulatory Authority, or FINRA, in an amount up to \$40,000. The underwriters have agreed to reimburse us an aggregate of

\$944,999.93 (or \$1,086,749.90 if the option to purchase additional shares is exercised in full) for certain expenses incurred in connection with this offering.

Option to Purchase Additional Shares

We have granted an option to the underwriters, exercisable for 30 days after the date of this prospectus, to purchase up to 1,944,444 additional shares at the public offering price, less the underwriting discount. If the underwriters exercise this option, each will be obligated, subject to conditions contained in the underwriting agreement, to purchase a number of additional shares proportionate to that underwriter's initial amount reflected in the above table.

No Sales of Similar Securities

We, our executive officers and directors have agreed not to sell or transfer any common stock or securities convertible into, exchangeable for, exercisable for, or repayable with common stock, for 60 days after the date of this prospectus without first obtaining the written consent of the representatives, subject to specified exceptions, including sales pursuant to existing trading plans established under Rule 10b5-1 under the Exchange Act and sales of shares sold in "at-the-market" offerings pursuant to the Sales Agreement. Specifically, we and these other persons have agreed not to directly or indirectly:

- offer, pledge, sell or contract to sell any common stock,
- sell any option or contract to purchase any common stock,
- purchase any option or contract to sell any common stock,
- grant any option, right or warrant for the sale of any common stock,
- lend or otherwise dispose of or transfer any common stock,
- request or demand that we file or make a confidential submission of a registration statement related to the common stock,
- enter into any swap or other agreement that transfers, in whole or in part, the economic consequence of ownership of any common stock whether any such swap or transaction is to be settled by delivery of shares or other securities, in cash or otherwise, or
- publicly disclose the intention to do any of the foregoing.

This lock-up provision applies to common stock and to securities convertible into or exchangeable or exercisable for or repayable with common stock. It also applies to common stock owned now or acquired later by the person executing the agreement or for which the person executing the agreement later acquires the power of disposition.

These restrictions terminate, other than with respect to "at-the-market" sales pursuant to the Sales Agreement, after the close of trading of the common stock on and including the 60th day after the date of this prospectus supplement. This restriction terminates with respect to sales pursuant to the Sales Agreement 30 days after the date of this prospectus supplement.

Nasdaq Global Select Market Listing

The shares are listed on the Nasdaq Global Select Market under the symbol "MLYS."

Price Stabilization, Short Positions

Until the distribution of the shares is completed, SEC rules may limit underwriters and selling group members from bidding for and purchasing our common stock. However, the representatives may engage in transactions that stabilize the price of the common stock, such as bids or purchases to peg, fix or maintain that price.

In connection with the offering, the underwriters may purchase and sell our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering. "Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares described above. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option granted to them. "Naked" short sales are sales in excess of such option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of shares of common stock made by the underwriters in the open market prior to the completion of the offering.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. The underwriters may conduct these transactions on the Nasdaq Global Select Market, in the over-the-counter market or otherwise.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor any of the underwriters make any representation that the representatives will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Passive Market Making

In connection with this offering, underwriters and selling group members may engage in passive market making transactions in the common stock on the Nasdaq Global Select Market in accordance with Rule 103 of Regulation M under the Exchange Act during a period before the commencement of offers or sales of common stock and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded. Passive market making may cause the price of our common stock to be higher than the price that otherwise would exist in the open market in the absence of those transactions. The underwriters and dealers are not required to engage in passive market making and may end passive market making activities at any time.

Electronic Distribution

In connection with the offering, certain of the underwriters or securities dealers may distribute prospectuses by electronic means, such as e-mail.

Other Relationships

Some of the underwriters and their affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with us or our affiliates. They have received, or may in the future receive, customary fees and commissions for these transactions. For example, BofA Securities, Inc. and Evercore Group L.L.C. are our sales agents under our ATM Equity Offering Sales Agreement, pursuant to which we may offer and sell, from time to time, up to \$100 million of shares of common stock through an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act.

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

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

Notice to Prospective Investors in the European Economic Area

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

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

provided that no such offer of shares shall require us or any underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

Each person in a Relevant State who initially acquires any shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with us and the underwriters that it is a qualified investor within the meaning of the Prospectus Regulation.

In the case of any shares being offered to a financial intermediary as that term is used in Article 5(1) of the Prospectus Regulation, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer to the public other than their offer or resale in a Relevant State to qualified investors, in circumstances in which the prior consent of the representatives has been obtained to each such proposed offer or resale.

We, the underwriters and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements.

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

The above selling restriction is in addition to any other selling restrictions set out below.

Notice to Prospective Investors in the United Kingdom

In relation to the United Kingdom (UK), no shares have been offered or will be offered pursuant to the offering to the public in the UK prior to the publication of a prospectus in relation to the shares which has been approved by the Financial Conduct Authority in the UK in accordance with the UK Prospectus Regulation and the FSMA, except that offers of shares may be made to the public in the UK at any time under the following exemptions under the UK Prospectus Regulation and the FSMA:

- a. to any legal entity which is a qualified investor as defined under the UK Prospectus Regulation;
- b. to fewer than 150 natural or legal persons (other than qualified investors as defined under the UK Prospectus Regulation), subject to obtaining the prior consent of representatives for any such offer; or

c. at any time in other circumstances falling within section 86 of the FSMA,

provided that no such offer of shares shall require us or any underwriter to publish a prospectus pursuant to Section 85 of the FSMA or Article 3 of the UK Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

Each person in the UK who initially acquires any shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with us and the underwriters that it is a qualified investor within the meaning of the UK Prospectus Regulation.

In the case of any shares being offered to a financial intermediary as that term is used in Article 5(1) of the UK Prospectus Regulation, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer to the public other than their offer or resale in the UK to qualified investors, in circumstances in which the prior consent of the representatives has been obtained to each such proposed offer or resale.

We, the underwriters and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements.

For the purposes of this provision, the expression an “offer to the public” in relation to any shares in the UK means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, the expression “UK Prospectus Regulation” means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018, and the expression “FSMA” means the Financial Services and Markets Act 2000.

This document is for distribution only to persons who (i) have professional experience in matters relating to investments and who qualify as investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the Financial Promotion Order), (ii) are persons falling within Article 49(2)(a) to (d) (high net worth companies, unincorporated associations etc.) of the Financial Promotion Order, (iii) are outside the United Kingdom, or (iv) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000, as amended (FSMA)) in connection with the issue or sale of any securities may otherwise lawfully be communicated or caused to be communicated (all such persons together being referred to as relevant persons). This document is directed only at relevant persons and must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is available only to relevant persons and will be engaged in only with relevant persons.

Notice to Prospective Investors in Switzerland

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

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

Notice to Prospective Investors in the Dubai International Financial Centre

This prospectus supplement relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority (DFSA). This prospectus supplement is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus supplement nor taken steps to verify the information set forth herein and has no responsibility for the prospectus supplement. The shares to which this prospectus supplement relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus supplement you should consult an authorized financial advisor.

Notice to Prospective Investors in Australia

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission (ASIC), in relation to the offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001 (the Corporations Act), and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the shares may only be made to persons (the Exempt Investors) who are “sophisticated investors” (within the meaning of section 708(8) of the Corporations Act), “professional investors” (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Notice to Prospective Investors in Hong Kong

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

Notice to Prospective Investors in Japan

The shares have not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended) and, accordingly, will not be offered or sold, directly or indirectly, in Japan, or

for the benefit of any Japanese Person or to others for re-offering or resale, directly or indirectly, in Japan or to any Japanese Person, except in compliance with all applicable laws, regulations and ministerial guidelines promulgated by relevant Japanese governmental or regulatory authorities in effect at the relevant time. For the purposes of this paragraph, "Japanese Person" shall mean any person resident in Japan, including any corporation or other entity organized under the laws of Japan.

Notice to Prospective Investors in Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, the shares were not offered or sold or caused to be made the subject of an invitation for subscription or purchase and will not be offered or sold or caused to be made the subject of an invitation for subscription or purchase, and this prospectus or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares, has not been circulated or distributed, nor will it be circulated or distributed, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the SFA)) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

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

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

Notice to Prospective Investors in Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

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

provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

MATERIAL UNITED STATES FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following discussion is a summary of the material U.S. federal income tax consequences to Non-U.S. Holders (as defined below) of the purchase, ownership and disposition of our common stock issued pursuant to this offering, but does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws are not discussed. This discussion is based on the U.S. Internal Revenue Code of 1986, as amended (the Code), Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service (the IRS), in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a Non-U.S. Holder. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the purchase, ownership and disposition of our common stock.

This discussion is limited to Non-U.S. Holders that hold our common stock as a “capital asset” within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a Non-U.S. Holder’s particular circumstances, including the impact of the Medicare contribution tax on net investment income and the alternative minimum tax. In addition, it does not address consequences relevant to Non-U.S. Holders subject to special rules, including, without limitation:

- U.S. expatriates and former citizens or long-term residents of the United States;
- persons holding our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;
- banks, insurance companies and other financial institutions;
- brokers, dealers or traders in securities;
- “controlled foreign corporations,” “passive foreign investment companies” and corporations that accumulate earnings to avoid U.S. federal income tax;
- partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein);
- tax-exempt organizations or governmental organizations;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;
- tax-qualified retirement plans; and
- “qualified foreign pension funds” as defined in Section 897(l)(2) of the Code and entities all of the interests of which are held by qualified foreign pension funds.

If an entity or arrangement treated as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR

COMMON STOCK ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.**Definition of a Non-U.S. Holder**

For purposes of this discussion, a “Non-U.S. Holder” is any beneficial owner of our common stock that is neither a “U.S. person” nor an entity or arrangement treated as a partnership for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (i) is subject to the primary supervision of a U.S. court and the control of one or more “United States persons” (within the meaning of Section 7701(a)(30) of the Code), or (ii) has a valid election in effect to be treated as a United States person for U.S. federal income tax purposes.

Distributions

We do not anticipate declaring or paying cash dividends to holders of our common stock in the foreseeable future. However, if we do make distributions of cash or property on our common stock, such distributions will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a Non-U.S. Holder’s adjusted tax basis in its common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below in “—Sale or Other Taxable Disposition.”

Subject to the discussion below on effectively connected income, dividends paid to a Non-U.S. Holder will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty, provided the Non-U.S. Holder furnishes a valid IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) certifying qualification for the lower treaty rate). If a Non-U.S. Holder holds the stock through a financial institution or other intermediary, the Non-U.S. Holder will be required to provide appropriate documentation to the intermediary, which then will be required to provide certification to the applicable withholding agent, either directly or through other intermediaries. A Non-U.S. Holder that does not timely furnish the required documentation, but that qualifies for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. Holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaty.

If dividends paid to a Non-U.S. Holder are effectively connected with the Non-U.S. Holder’s conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment or fixed base in the United States to which such dividends are attributable), the Non-U.S. Holder will be exempt from the U.S. federal withholding tax described above. To claim the exemption, the Non-U.S. Holder must furnish to the applicable withholding agent a valid IRS Form W-8ECI, certifying that the dividends are effectively connected with the Non-U.S. Holder’s conduct of a trade or business within the United States.

Any such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular rates. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected dividends, as adjusted for certain items. Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

Sale or Other Taxable Disposition

Subject to the discussions below of backup withholding and withholding under FATCA (defined below), a Non-U.S. Holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our common stock unless:

- the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment or fixed base in the United States to which such gain is attributable);
- the Non-U.S. Holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or
- our common stock constitutes a U.S. real property interest (USRPI) by reason of our status as a U.S. real property holding corporation (USRPHC) for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular rates. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

A Non-U.S. Holder described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on gain realized upon the sale or other taxable disposition of our common stock, which may be offset by U.S.-source capital losses of the Non-U.S. Holder (even though the individual is not considered a resident of the United States), provided the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we currently are not, and do not anticipate becoming, a USRPHC. Because the determination of whether we are a USRPHC depends, however, on the fair market value of our USRPIs relative to the fair market value of our non-U.S. real property interests and our other business assets, there can be no assurance we currently are not a USRPHC or will not become one in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition of our common stock by a Non-U.S. Holder will not be subject to U.S. federal income tax if our common stock is "regularly traded," as defined by applicable Treasury Regulations, on an established securities market, and such Non-U.S. Holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the five-year period ending on the date of the sale or other taxable disposition or the Non-U.S. Holder's holding period.

Non-U.S. Holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Payments of dividends on our common stock will not be subject to backup withholding, provided the applicable withholding agent does not have actual knowledge or reason to know the holder is a United States person and the holder either certifies its non-U.S. status, such as by furnishing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or otherwise establishes an exemption. However, information returns are required to be filed with the IRS in connection with any distributions on our common stock paid to the Non-U.S. Holder, regardless of whether such distributions constitute dividends or whether any tax was actually withheld. In addition, proceeds of the sale or other taxable disposition of our common stock within the United States or conducted through certain U.S.-related brokers generally will be subject to backup withholding or information reporting unless the applicable withholding agent receives the certification described above and does not have actual knowledge or reason to know that such holder is a United States person, or the holder otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker generally will not be subject to backup withholding or information reporting.

Copies of information returns that are filed with the IRS may also be made available under the provisions of an applicable treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides or is established.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a Non-U.S. Holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under Sections 1471 to 1474 of the Code (such Sections are commonly referred to as the Foreign Account Tax Compliance Act (FATCA)) on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends on, or subject to the proposed Treasury Regulations discussed below, gross proceeds from the sale or other disposition of, our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (i) the foreign financial institution undertakes certain diligence and reporting obligations, (ii) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (iii) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in clause (i) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends on our common stock. While withholding under FATCA would also have applied to payments of gross proceeds from the sale or other disposition of stock on or after January 1, 2019, proposed Treasury Regulations eliminate FATCA withholding on payments of gross proceeds entirely. Taxpayers (including applicable withholding agents) generally may rely on these proposed Treasury Regulations until final Treasury Regulations are issued. There can be no assurance that final Treasury Regulations would provide an exemption from FATCA withholding for gross proceeds.

Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our common stock.

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon by our counsel, Latham & Watkins LLP, San Diego, California. The underwriters are being represented in connection with this offering by Allen Overy Shearman Sterling US LLP, New York, New York.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2024, as set forth in their report, which is incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

Available Information

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, of which this prospectus supplement forms a part. The rules and regulations of the SEC allow us to omit from this prospectus supplement and the accompanying prospectus certain information included in the registration statement. For further information about us and the securities we are offering under this prospectus supplement, you should refer to the registration statement and the exhibits and schedules filed with the registration statement. With respect to the statements contained in this prospectus supplement and the accompanying prospectus regarding the contents of any agreement or any other document, in each instance, the statement is qualified in all respects by the complete text of the agreement or document, a copy of which has been filed as an exhibit to the registration statement.

We file reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is <http://www.sec.gov>.

Our website address is www.mineralystx.com. The information on, or accessible through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus and should not be considered part of this prospectus supplement or the accompanying prospectus.

Incorporation by Reference

The SEC's rules allow us to "incorporate by reference" information into this prospectus supplement, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus supplement and the accompanying prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus supplement and the accompanying prospectus to the extent that a statement contained in this prospectus supplement or the accompanying prospectus modifies or replaces that statement.

We incorporate by reference our documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act between the date of this prospectus supplement and the termination of the offering of the securities described in this prospectus supplement. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed "filed" with the SEC, including our Compensation Committee report and performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

This prospectus supplement and the accompanying prospectus incorporate by reference the documents set forth below that have previously been filed with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2024, filed with the SEC on [February 12, 2025](#);
- the information specifically incorporated by reference into our Annual Report on Form 10-K from our Definitive Proxy Statement on Schedule 14A for the year ended December 31, 2023, filed with the SEC on [April 9, 2024](#);
- our Current Reports on Form 8-K, filed with the SEC on [January 8, 2025](#), [February 4, 2025](#) and [March 10, 2025](#); and
- the description of our common stock contained in our registration statement on Form 8-A, filed with the SEC on [February 6, 2023](#), as the description therein has been updated and superseded by the description of our capital stock contained in [Exhibit 4.4](#) to our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on March 21, 2024, and including any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus supplement and the accompanying prospectus and deemed to be part of this prospectus supplement and the accompanying prospectus from the date of the filing of such reports and documents.

You may request a free copy of any of the documents incorporated by reference in this prospectus supplement and the accompanying prospectus (other than exhibits, unless they are specifically incorporated by reference in the documents) by writing or telephoning us at the following address:

Mineralys Therapeutics, Inc.
Attention: Corporate Secretary
150 N. Radnor Chester Road, Suite F200
Radnor, PA 19087
(888) 378-6240

PROSPECTUS



\$500,000,000
Common Stock
Preferred Stock
Debt Securities
Warrants
Units

8,888,924 Shares of Common Stock Offered by Selling Stockholders

We may offer and sell up to \$500,000,000 in the aggregate of the securities identified above from time to time in one or more offerings. This prospectus provides you with a general description of the securities and the general manner in which these securities will be offered.

Each time we offer and sell securities, we will provide a supplement to this prospectus that contains specific information about the offering and the amounts, prices and terms of the securities. The prospectus supplement will also describe the specific manner in which these securities will be offered and may also add, update or change information contained in this prospectus with respect to that offering. You should carefully read this prospectus and the applicable prospectus supplement before you invest in any of our securities.

We may offer and sell the securities described in this prospectus and any prospectus supplement to or through one or more underwriters, dealers and agents, or directly to purchasers, or through a combination of these methods. If any underwriters, dealers or agents are involved in the sale of any of the securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. See the sections of this prospectus entitled "About this Prospectus" and "Plan of Distribution" for more information. No securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

This prospectus also relates to the resale, from time to time, by the selling stockholders identified in this prospectus under the caption "Selling Stockholders" of up to 8,888,924 shares of our common stock, on the terms described in this prospectus or in an applicable prospectus supplement. We will not receive any proceeds from the sale of shares of common stock by the selling stockholders. The selling stockholders will bear all commissions and discounts, if any, attributable to the sale of the shares.

The selling stockholders may sell the shares of our common stock offered by this prospectus from time to time on terms to be determined at the time of sale through ordinary brokerage transactions or through any other means described in this prospectus under the caption "Plan of Distribution." The shares of common stock may be sold at fixed prices, at market prices prevailing at the time of sale, at prices related to prevailing market price or at negotiated prices.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE THE "RISK FACTORS" SECTION ON PAGE 6 OF THIS PROSPECTUS AND ANY SIMILAR SECTION CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AND IN THE DOCUMENTS INCORPORATED BY REFERENCE IN THIS PROSPECTUS OR ANY PROSPECTUS SUPPLEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR SECURITIES.

Our common stock is listed on The Nasdaq Global Select Market (Nasdaq) under the symbol "MLYS." On March 15, 2024, the last reported sale price of our common stock on Nasdaq was \$12.69 per share. The applicable prospectus supplement will contain information, where applicable, as to any other listing, if any, on Nasdaq or any securities market or other securities exchange of the securities covered by the prospectus supplement. Prospective purchasers of our securities are urged to obtain current information as to the market prices of our securities, where applicable.

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

The date of this prospectus is April 11, 2024

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission (the SEC), using a “shelf” registration process. By using a shelf registration statement, we may sell securities from time to time and in one or more offerings up to a total dollar amount of \$500,000,000 as described in this prospectus. In addition, this prospectus relates to the resale, from time to time, by the selling stockholders identified in this prospectus under the caption “Selling Stockholders,” of up to 8,888,924 shares of our common stock. Each time that we offer and sell securities, we will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and sold and the specific terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement or free writing prospectus may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement or free writing prospectus, you should rely on the prospectus supplement or free writing prospectus, as applicable. Before purchasing any securities, you should carefully read both this prospectus and the applicable prospectus supplement (and any applicable free writing prospectuses), together with the additional information described under the heading “Where You Can Find More Information; Incorporation by Reference.”

You should rely only on the information we have provided or incorporated by reference in this prospectus, any prospectus supplement or any applicable free writing prospectuses. We have not authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus, any applicable prospectus supplement or any applicable free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the applicable prospectus supplement to this prospectus is accurate only as of the date on its respective cover, that the information appearing in any applicable free writing prospectus is accurate only as of the date of that free writing prospectus, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates.

This prospectus incorporates by reference, and any prospectus supplement or free writing prospectus may contain and incorporate by reference, market data and industry statistics and forecasts that are based on independent industry publications and other publicly available information. Although we believe these sources are reliable, we do not guarantee the accuracy or completeness of this information and we have not independently verified this information. In addition, the market and industry data and forecasts that may be included or incorporated by reference in this prospectus, any prospectus supplement or any applicable free writing prospectus may involve estimates, assumptions and other risks and uncertainties and are subject to change based on various factors, including those discussed under the heading “Risk Factors” contained in this prospectus, the applicable prospectus supplement and any applicable free writing prospectus, and under similar headings in other documents that are incorporated by reference into this prospectus.

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

When we refer to “MLYS,” “we,” “our,” “us” and the “Company” in this prospectus, we mean Mineralys Therapeutics, Inc. When we refer to “you,” we mean the potential holders of the applicable series of securities.

WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE**Available Information**

We file reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is <https://www.sec.gov>.

Our website address is <https://www.mineralystx.com>. The information on our website, however, is not, and should not be deemed to be, a part of this prospectus. We have included our website address as an inactive textual reference only.

This prospectus and any prospectus supplement are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Forms of the indenture and other documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement or may be incorporated by reference in the registration statement. Statements in this prospectus or any prospectus supplement about these documents are summaries and each statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement through the SEC's website, as provided above.

Incorporation by Reference

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in this prospectus or a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or a subsequently filed document incorporated by reference modifies or replaces that statement.

This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC (other than those documents or the portions of those documents not deemed to be filed):

- Our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on [March 21, 2024](#).
- Our Current Reports on Form 8-K filed with the SEC on [January 4, 2024](#) and [February 8, 2024](#).
- The description of our common stock contained in our Registration Statement on [Form 8-A12B](#), filed with the SEC on February 6, 2023, including any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the Exchange Act), on or after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of the registration statement, and on or after the date of this prospectus and prior to the termination of the offering under this prospectus and any prospectus supplement, will also be incorporated by reference in this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed above or filed in the future, that are not deemed "filed" with the SEC, including any Compensation Committee report or performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

You may request a free copy of any of the documents incorporated by reference in this prospectus by writing or telephoning us at the following address:

Mineralys Therapeutics, Inc.
150 N. Radnor Chester Road
Suite F200
Radnor, PA 19087
(888) 378-6240

Exhibits to the filings will not be sent, however, unless those exhibits have specifically been incorporated by reference in this prospectus or any accompanying prospectus supplement.

You may also access these documents on our website, <https://mineralystx.com>. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

You should rely only on information contained in, or incorporated by reference into, this prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference in this prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

PROSPECTUS SUMMARY

The following is a summary of what we believe to be the most important aspects of our business. We urge you to read this entire prospectus and the consolidated financial statements, notes to the consolidated financial statements and other information incorporated by reference from our other filings with the SEC or included in any applicable prospectus supplement. Investing in our securities involves risks. Therefore, carefully consider the risk factors set forth in any prospectus supplements and in our most recent annual and quarterly filings with the SEC, as well as other information in this prospectus and any prospectus supplements and the documents incorporated by reference herein or therein, before purchasing our securities. Each of the risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our securities.

Overview

We are a clinical-stage biopharmaceutical company focused on developing medicines to target diseases driven by abnormally elevated aldosterone. Our clinical-stage product candidate, lorundrostat, is a proprietary, orally administered, highly selective aldosterone synthase inhibitor (ASI), that we are initially developing for the treatment of cardiorenal conditions affected by abnormally elevated aldosterone, including hypertension and chronic kidney disease (CKD). In the United States, there are over 115 million patients who have sustained elevated blood pressure (BP), or hypertension, and more than half of this population fails to achieve their BP goals, defined as BP of below 130/80 mmHg, with currently available medications. There are over 30 million treated patients who do not achieve their BP goal, of whom approximately 20 million have systolic BP levels greater than 140 mmHg. Patients with hypertension that persists despite taking two or more medications have 1.8 and 2.5 times greater mortality risk due to either cardiovascular disease or stroke, respectively. In a Phase 2 proof-of-concept clinical trial evaluating 200 subjects (Target-HTN) with uncontrolled hypertension (uHTN), defined as individuals who are unable to achieve BP of below 130/80 mmHg despite taking two or more lines of antihypertensive medication, or resistant hypertension (rHTN), defined as individuals who are unable to achieve BP of below 130/80 mmHg despite taking three or more antihypertensive medications typically including a diuretic, lorundrostat demonstrated a clinically meaningful and statistically significant reduction in BP with once-daily dosing and was well tolerated. Abnormally elevated aldosterone levels are a key factor in driving hypertension in approximately 25% of hypertensive patients. In addition to hypertension, we intend to investigate the benefits of lorundrostat in subjects with hypertension and CKD. We believe that our product candidate holds promise to be an innovative solution for the rapidly growing unmet need in multiple cardiorenal metabolic disorders.

Hypertension is one of the most common medical conditions globally, afflicting approximately 1.3 billion people and resulting in an estimated average of \$130 billion annual economic burden in the United States alone between 2003 and 2014. Despite the availability of multiple treatment options, including thiazide diuretics, angiotensin-converting enzyme-inhibitors, angiotensin II receptor blockers, calcium channel blockers, beta blockers, and mineralocorticoid receptor antagonists, the prevalence of uHTN continues to grow, further exacerbated by the rapidly rising rate of obesity. Over 30 million hypertensive patients in the United States are unable to achieve their BP goal despite treatment. Within this population there are approximately 10.3 million patients suffering from rHTN. Multiple large-scale studies have demonstrated that patients who fail to achieve their BP goal have a significantly elevated risk of developing heart disease, stroke, and kidney disease (Wright JT Jr, et al. A randomized trial of intensive versus standard blood-pressure control. *N Engl J Med.* 2015;373(22):2103-2116; and Zhou, et al., Uncontrolled Hypertension Increases Risk of All-Cause and Cardiovascular Disease Mortality in US Adults: the NHANES III Linked Mortality Study. *Scientific Reports*, 2018;8(1):1-7). Patients with rHTN have a 1.5 and 2.3 times higher risk than normotensive patients for composite cardiovascular events and end-stage renal disease, respectively. Notwithstanding this significant and growing unmet need, there has been a lack of U.S. Food and Drug Administration-approved novel therapies targeting hypertension, with no new class of antihypertensive treatment approved within the last fifteen years.

Corporate Information

We were incorporated under the laws of the State of Delaware in May 2019 as Catalys SC1, Inc. and we subsequently changed our name to Mineralys Therapeutics, Inc. Our mailing address is 150 N. Radnor Chester Road, Suite F200, Radnor, PA 19087 and our telephone number is 888-378-6240. Our website address is <https://>

www.mineralystx.com. The information on our website, however, is not, and should not be deemed to be, a part of this prospectus. We have included our website address as an inactive textual reference only.

RISK FACTORS

Investment in any securities offered pursuant to this prospectus and the applicable prospectus supplement involves risks. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in the applicable prospectus supplement and any applicable free writing prospectus before making a decision about investing in our securities. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Exchange Act. All statements other than statements of historical facts contained in this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus, including statements regarding our future results of operations and financial position, business strategy, research and development plans, the anticipated timing, costs, design, and conduct of our ongoing and planned preclinical studies and planned clinical trials for lorundrostat and any future product candidates, the timing and likelihood of regulatory filings and approvals for lorundrostat and any future product candidates, our ability to commercialize our product candidates, if approved, the potential to develop future product candidates, the potential benefits of strategic collaborations and our intent to enter into any strategic arrangements, the timing and likelihood of success, and plans and objectives of management for future operations and future results of anticipated product development efforts, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. This prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus may also contain estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “continue” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “will” or “would” or the negative of these terms or other similar expressions. The forward-looking statements in this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the respective dates of this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus, as applicable, and are subject to a number of risks, uncertainties and assumptions, including those described under “Risk Factors” and elsewhere in this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein, and any applicable free writing prospectus. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained in this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein and therein and any applicable free writing prospectus, whether as a result of any new information, future events, changed circumstances or otherwise.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of the securities as set forth in the applicable prospectus supplement.

We will not receive any of the proceeds from the sale of any common stock offered pursuant to this prospectus by the selling stockholders.

SELLING STOCKHOLDERS

This prospectus also relates to the possible resale by our stockholders, who we refer to in this prospectus as the “selling stockholders,” from time to time of up to an aggregate of 8,888,924 shares of our common stock, including 549,755 shares of common stock issuable upon the exercise of Pre-Funded Warrants (as defined below) with an exercise price of \$0.001 per share. When we refer to the “selling stockholders” in this prospectus, we mean the stockholders listed in the table below, and any pledgees, donees, transferees, assignees and others who later come to hold some or all of the common stock covered by this prospectus.

The table below presents information regarding the selling stockholders, the shares of common stock beneficially owned by the selling stockholders, the shares of common stock that the selling stockholders may sell or otherwise dispose of from time to time under this prospectus and the number and percentage of our common stock the selling stockholders will own assuming all of the shares covered by this prospectus are sold by the selling stockholders.

The selling stockholders in the table below are parties to a securities purchase agreement (the Purchase Agreement) with us, dated February 7, 2024, for the private placement (the Private Placement) of (i) 8,339,169 shares of our common stock at a price of \$13.50 per share and, (ii) with respect to a certain investor, pre-funded warrants (the Pre-Funded Warrants) to purchase an aggregate of 549,755 shares of common stock in lieu of shares of common stock, at a purchase price of \$13.499 per Pre-Funded Warrant (the shares of common stock issuable upon exercise of the Pre-Funded Warrants, the Warrant Shares) for aggregate gross proceeds of approximately \$120.0 million, before deducting offering expenses.

Each Pre-Funded Warrant has an exercise price of \$0.001 per share of common stock, is immediately exercisable on the date of issuance, and will not expire. Under the terms of the Pre-Funded Warrants, we may not effect the exercise of any portion of any Pre-Funded Warrant, and a holder will not have the right to exercise any portion of any Pre-Funded Warrant, which, upon giving effect to such exercise, would cause a holder (together with its affiliates) to own more than a specified beneficial ownership limitation of either 4.99%, 9.99% or 19.99% (as selected by such holder prior to the issuance of the Pre-Funded Warrant) of the number of shares of common stock outstanding immediately after giving effect to such exercise, as such percentage ownership is determined in accordance with the terms of the Pre-Funded Warrants. However, any holder may increase or decrease such percentage to any other percentage not in excess of 19.99%, provided that any increase in such percentage shall not be effective until 61 days after such notice is delivered to us.

In accordance with the terms of the Purchase Agreement, we are registering 8,888,924 shares of our common stock, including 549,755 shares of common stock issuable upon the exercise of Pre-Funded Warrants, for resale under the registration statement of which this prospectus forms a part. For additional information regarding material relationships between the selling stockholders (or their affiliates) and us, please refer to the documents filed by us with the SEC and incorporated by reference herein, including the exhibits thereto.

We do not know whether, when or in what amounts the selling stockholders may sell or otherwise dispose of the shares of common stock covered hereby. The selling stockholders might not sell or dispose of any or all of the shares covered by this prospectus or may sell or dispose of some or all of the shares other than pursuant to this prospectus. Because the selling stockholders may not sell or otherwise dispose of some or all of the shares covered by this prospectus and because there are currently no agreements, arrangements or understandings with respect to the sale or other disposition of any of the shares, we cannot estimate the number of the shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, we have assumed that all of the shares of common stock covered by this prospectus will be sold by the selling stockholders and that any other shares of our common stock beneficially owned by the selling stockholders will continue to be beneficially owned.

The information in the table is based on 49,631,159 shares of our common stock outstanding as of March 15, 2024 and was prepared based on information supplied to us by the selling stockholders. Beneficial ownership is determined in accordance with Section 13(d) of the Exchange Act and generally includes voting or investment power with respect to securities and including any securities that grant the selling stockholders the right to acquire shares of common stock within 60 days of March 15, 2024. Other than the transactions referred to herein and in

documents filed by us with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, the selling stockholders have not within the past three years had any position, office or other material relationship with us or any of our subsidiaries other than as a holder of our securities.

Name of Selling Stockholders	Shares of Common Stock Beneficially Owned Prior to the Offering (1)	Maximum Number of Shares that May Be Offered Pursuant to this Prospectus	Shares Beneficially Owned After the Sale of the Maximum Number of Shares Offered Hereby (2)	
			Number	Percent
Entities affiliated with RA Capital Management, L.P. (3)	4,970,047	2,222,263	3,196,808	6.44%
TCG Crossover Fund II, L.P. (4)	—	3,185,185	—	*
OrbiMed Partners Master Fund Limited (5)	710,579	524,585	185,994	*
OrbiMed Genesis Master Fund, L.P. (6)	460,400	340,200	120,200	*
The Biotech Growth Trust PLC (7)	850,445	320,400	530,045	1.07%
Venrock Healthcare Capital Partners EG, L.P. (8)	—	394,888	—	*
Venrock Healthcare Capital Partners III, L.P. (9)	—	146,055	—	*
VHCP Co-Investment Holdings III, LLC (10)	—	14,611	—	*
Blue Owl Healthcare Opportunities IV Public Investments LP (11)	—	259,259	—	*
Franklin Templeton Investment Funds - Franklin Biotechnology Discovery Fund (12)	841,744	244,230	597,514	1.20%
Franklin Strategic Series - Franklin Biotechnology Fund (12)	435,885	126,139	309,746	*
SR One Capital Opportunities Fund I, LP (13)	2,016,822	222,222	1,794,600	3.62%
Laurion Capital Master Fund Ltd. (14)	1,304,216	148,148	1,156,068	2.33%
Samsara BioCapital, L.P. (15)	5,074,916	555,555	4,519,361	9.11%
Sphera Biotech Master Fund LP (16)	576,531	88,888	487,643	*
Sphera Global Healthcare Master Fund (17)	82,272	22,222	60,050	*
Driehaus Life Sciences (QP) Fund, L.P. (18)	68,089	19,670	48,419	*
Driehaus Life Sciences Master Fund, L.P. (18)	189,282	54,404	134,878	*

* Less than 1%.

- (1) "Beneficial ownership" is a term broadly defined by the SEC in Rule 13d-3 under the Exchange Act, and includes more than the typical form of stock ownership, that is, stock held in the person's name. The term also includes what is referred to as "indirect ownership," meaning ownership of shares as to which a person has or shares investment power. For purposes of this table, a person or group of persons is deemed to have "beneficial ownership" of any shares that are currently exercisable or exercisable within 60 days of March 15, 2024.
- (2) Assumes that all shares of common stock being registered under the registration statement of which this prospectus forms a part that are held by the selling stockholders are resold to third parties.
- (3) Includes (i) 2,983,755 shares of common stock held directly by RA Capital Healthcare Fund, L.P. (RA Healthcare); (ii) 1,867,229 shares of common stock held by RA Capital Nexus Fund III, L.P. (Nexus III); (iii) a total of 15,888 shares underlying vested stock options held by Dr. Derek DiRocco for the benefit of RA Capital Management, L.P.; and (iv) 2,444 shares underlying stock options which shall vest within 60 days of March 15, 2024 held by Dr. DiRocco for the benefit of RA Capital Management, L.P. RA

Healthcare also holds Pre-Funded Warrants through which it has a right to acquire 549,755 shares of common stock. The Pre-Funded Warrants contain a provision (the Beneficial Ownership Blocker) which precludes exercise of the Pre-Funded Warrants to the extent that, following exercise, RA Healthcare, together with its affiliates and other attribution parties, would own more than 9.99% of our common stock outstanding. RA Healthcare is currently prohibited from exercising the Pre-Funded Warrants to the extent that the exercise would result in beneficial ownership of more than 4,970,047 shares of common stock by entities affiliated with RA Capital Management, L.P. RA Capital Management, L.P. is the investment manager for RA Healthcare and Nexus III. The general partner of RA Capital Management, L.P. is RA Capital Management GP, LLC, of which Peter Kolchinsky, Ph.D. and Rajeev Shah are the managing members. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky, Ph.D. and Rajeev Shah may be deemed to have voting and investment power over the shares held of record by RA Healthcare and Nexus III. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky, Ph.D. and Rajeev Shah disclaim beneficial ownership of such shares, except to the extent of any pecuniary interest therein. Dr. DiRocco, one of our directors, is a partner at RA Capital Management, L.P.

- (4) TCG Crossover GP II, LLC is the general partner of TCG Crossover Fund II, L.P. and may be deemed to have voting, investment, and dispositive power with respect to these securities. Chen Yu is the sole managing member of TCG Crossover GP II, LLC and may be deemed to share voting, investment and dispositive power with respect to these securities.
- (5) OrbiMed Capital LLC (OrbiMed Capital) is the investment advisor of OrbiMed Partners Master Fund Limited (OPM). OrbiMed Capital exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho, and W. Carter Neild, each of whom disclaims beneficial ownership of the shares held by OPM.
- (6) OrbiMed Genesis GP LLC (Genesis GP) is the general partner of OrbiMed Genesis Master Fund, L.P. (Genesis Master Fund). OrbiMed Advisors LLC (OrbiMed Advisors) is the managing member of Genesis GP. By virtue of such relationships, Genesis GP and OrbiMed Advisors may be deemed to have voting power and investment power over the securities held by Genesis Master Fund and as a result, may be deemed to have beneficial ownership over such securities. OrbiMed Advisors exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho, and W. Carter Neild, each of whom disclaims beneficial ownership of the shares held by Genesis Master Fund.
- (7) OrbiMed Capital LLC (OrbiMed Capital) is the portfolio manager of The Biotech Growth Trust PLC (BIOG). OrbiMed Capital exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho, and W. Carter Neild, each of whom disclaims beneficial ownership of the shares held by BIOG.
- (8) VHCP Management EG, LLC (VHCPM EG) is the sole general partner of Venrock Healthcare Capital Partners EG, L.P. (VHCP EG). Dr. Bong Koh and Nimish Shah are the voting members of VHCPM EG.
- (9) VHCP Management III, LLC (VHCPM III) is the sole general partner of Venrock Healthcare Capital Partners III, L.P. (VHCP III). Dr. Bong Koh and Nimish Shah are the voting members of VHCPM III.
- (10) VHCPM III is the sole manager of VHCP Co-Investment Holdings III, LLC. Dr. Bong Koh and Nimish Shah are the voting members of VHCPM III.
- (11) Blue Owl Healthcare Opportunities Advisors LLC is the investment manager of Blue Owl Healthcare Opportunities IV Public Investments LP and has voting and investment power over the shares held by Blue Owl Healthcare Opportunities IV Public Investments LP. Blue Owl Healthcare Opportunities Advisors LLC exercises voting and investment power through an investment committee comprised of Kevin Raidy, Timothy Anderson, Sandip Agarwala, and Brandyn Itzkowitz who each disclaims beneficial ownership over these securities.

- (12) Franklin Advisers, Inc. is the investment adviser of selling stockholder. Evan McCulloch has voting and/or dispositive power over the holdings of selling stockholder. Mr. McCulloch disclaims beneficial ownership of such securities, except to the extent of any pecuniary interest therein.
- (13) SR One Capital Opportunities Partners I, LP (SR One Partners) is the general partner of SR One Capital Opportunities Fund I, LP (Opportunities Fund). SR One Capital Management, LLC (SR One Management) is the general partner of SR One Partners. Simeon George, M.D. is the manager of SR One Management. All indirect holders of the above referenced shares disclaim beneficial ownership of all applicable shares except to the extent of their pecuniary interest therein.
- (14) Laurion Capital Management LP, the investment manager of Laurion Capital Master Fund Ltd., has voting and investment power over the securities held by Laurion Capital Master Fund Ltd. Messrs. Benjamin A. Smith and Sheehan Maduraperuma are the managing members of Laurion Capital GP LLC, which is the general partner of Laurion Capital Management LP. Each of Laurion Capital Master Fund Ltd., Laurion Capital GP LLC, Benjamin A. Smith and Sheehan Maduraperuma disclaims beneficial ownership over these securities.
- (15) Samsara BioCapital GP, LLC (Samsara LLC) is the general partner of Samsara BioCapital, L.P. (Samsara LP) and may be deemed to beneficially own the shares held by Samsara LP. Dr. Srinivas Akkaraju, one of our directors, has voting and investment power over the shares held by Samsara LP and, accordingly, may be deemed to beneficially own the shares held by Samsara LP. Each of Samsara LLC and Dr. Akkaraju disclaims beneficial ownership in these shares except to the extent of his or its respective pecuniary interest therein.
- (16) Sphera Biotech GP LP (the "General Partner") is the general partner of Sphera Biotech Master Fund LP. Sphera Global Healthcare Management LP is the general partner of the General Partner and acts as the Investment Manager for Sphera Biotech Master Fund LP and holds voting and investment power over the shares held by Sphera Biotech Master Fund LP. Accordingly, Sphera Global Healthcare Management LP may be deemed to have beneficial ownership of the shares held by Sphera Biotech Master Fund LP. Sphera Global Healthcare Management LP disclaims beneficial ownership of such shares, except to the extent of its pecuniary interest therein.
- (17) Sphera Global Healthcare Management LP acts as the Investment Manager for Sphera Global Healthcare Master Fund and holds voting and investment power over the shares held by Sphera Global Healthcare Master Fund. Accordingly, Sphera Global Healthcare Management LP may be deemed to have beneficial ownership of the shares held by Sphera Global Healthcare Master Fund LP. Sphera Global Healthcare Management LP disclaims beneficial ownership of such shares, except to the extent of its pecuniary interest therein.
- (18) Michael Caldwell, the portfolio manager, and Alex Munns, the assistant portfolio manager, exercise investment discretion and voting power over the securities but disclaim beneficial ownership of the shares.

The selling stockholders listed in the above table may have sold or transferred, in transactions pursuant to this prospectus or exempt from the registration requirements of the Securities Act, some or all of their shares since the date as of which the information is presented in the above table. Information concerning the selling stockholders may change from time to time and any such changed information will be set forth in supplements to this prospectus or amendments to the registration statement of which this prospectus is a part if and when necessary.

We have agreed to pay all costs, expenses and fees relating to the registration of the shares of our common stock covered by this prospectus. The selling stockholders have agreed to pay any underwriting discounts and commissions or similar charges incurred for the sale of such shares of our common stock.

Relationships with Selling Stockholders

Preferred Stock Financings

Series A Convertible Preferred Stock Financings. In February 2021, we entered into a Series A preferred stock purchase agreement, as amended in April 2021, pursuant to which we sold to investors in an initial closing in February 2021 and subsequent closings in April 2021 and January 2022 in private placements an aggregate of 86,332,216 shares of Series A convertible preferred stock. The per-share purchase price was \$0.477, and we received gross proceeds of approximately \$40.0 million.

Series B Convertible Preferred Stock Financings. In June 2022, we entered into a Series B preferred stock purchase agreement, pursuant to which in June 2022 we sold to investors, in private placements, an aggregate of 136,510,868 shares of Series B convertible preferred stock. The per-share purchase price was \$0.8644, and we received gross proceeds of approximately \$118.0 million.

The following table sets forth the aggregate number of shares acquired by the selling stockholders and their affiliates. These shares of convertible preferred stock, including the shares identified in the table below, converted into shares of common stock at a ratio of one-for-10.798 upon completion of our initial public offering (IPO).

Participants	Series A Convertible Preferred Stock	Series B Convertible Preferred Stock
Samsara BioCapital, L.P.	23,059,184	15,617,769
Entities affiliated with RA Capital Management, L.P.(1)	—	20,823,692

(1) Represents securities acquired by RA Healthcare and Nexus III.

Public Offering Participation Rights

We entered into letter agreements in June 2022 with, among others, Samsara LP and entities affiliated with RA Capital Management, L.P., each a beneficial owner of more than 5% of our capital stock. The letter agreements granted each of such investors a participation right to purchase a specified, pro rata percentage of shares of common stock in our IPO at the public offering price, subject to compliance with applicable securities laws. The letter agreement further provided that, under certain circumstances in which any such investor was unable to participate in our IPO, we were required to offer such investors shares of our common stock through a separate private placement to be concurrent with our IPO. Samsara LP and entities affiliated with RA Capital Management, L.P. each purchased approximately \$15.0 million and \$20.0 million, respectively, of shares of our common stock in our IPO at the IPO price of \$16.00 per share.

Investors' Rights Agreement

We entered into an investors' rights agreement in February 2021, as amended and restated in June 2022 (the investors' rights agreement), with the holders of our convertible preferred stock and certain holders of our common stock, including Samsara LP and entities affiliated with RA Capital Management, L.P. This agreement provides for certain rights relating to the registration of their shares of common stock issuable upon conversion of their convertible preferred stock and certain additional covenants made by us. Except for the registration rights (including the related provisions pursuant to which we have agreed to indemnify the parties to the investors' rights agreement), all rights under this agreement terminated upon closing of our IPO. The registration rights have continued following our IPO and will terminate five years after the closing of our IPO. See "Description of Capital Stock—Registration Rights—Investors' Rights Agreement" for additional information.

Voting Agreement

We entered into a voting agreement in February 2021, as amended and restated in June 2022 (the Voting Agreement), with the holders of our convertible preferred stock and certain holders of our common stock, including Samsara LP and entities affiliated with RA Capital Management, L.P., pursuant to which the following directors were each elected to serve as members on our board of directors and, as of the date of this registration statement,

continue to so serve: Srinivas Akkaraju, M. D., Ph.D., Alexander Asam, Ph.D., Jon Congleton, Derek DiRocco, Ph.D., Olivier Litzka, Ph.D., and Brian Taylor Slingsby, M.D., Ph.D., M.P.H. The Voting Agreement terminated upon the closing of our IPO, and members previously elected to our board of directors pursuant to this agreement continue to serve as directors until they resign, are removed or their successors are duly elected by holders of our common stock.

Right of Refusal and Co-Sale Agreement

We entered into a right of first refusal and co-sale agreement in February 2021, as amended and restated in June 2022 (the ROFR Agreement), with holders of our common stock affiliated with our executive officers and Catalys Pacific, which entities are referred to in the ROFR Agreement as key holders, and certain other holders of convertible preferred stock, including Samsara LP and entities affiliated with RA Capital Management, L.P. Pursuant to the ROFR Agreement, we have a right of first refusal on certain transfers of our shares by the key holders, holders of our convertible preferred stock have a secondary right of first refusal on such transfers, and such convertible preferred stockholders have a right of co-sale in respect of such transfers. The ROFR Agreement terminated upon the completion of our IPO.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock and certain provisions of our amended and restated certificate of incorporation (our certificate of incorporation), our amended and restated bylaws (our bylaws), and the investors' rights agreement, are summaries and are qualified in their entirety by reference to the full text of our certificate of incorporation, our bylaws and the investors' rights agreement, each of which is incorporated by reference as an exhibit to the registration statement of which this prospectus forms a part and applicable provisions of the General Corporation Law of the State of Delaware (the DGCL). See "Where You Can Find More Information; Incorporation by Reference." Our authorized capital stock consists of:

- 500,000,000 shares of common stock, par value \$0.0001 per share; and
- 50,000,000 shares of preferred stock, par value \$0.0001 per share.

Common Stock

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

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 and do not have cumulative voting rights. An election of directors by our stockholders shall be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. Subject to the supermajority votes for some matters, other matters shall be decided by the affirmative vote of our stockholders having a majority in voting power of the votes cast by the stockholders present or represented and voting on such matter. Our certificate of incorporation and bylaws also provide that our directors may be removed only for cause and only by the affirmative vote of the holders of at least two-thirds in voting power of the outstanding shares of capital stock entitled to vote thereon. In addition, the affirmative vote of the holders of at least two-thirds in voting power of the outstanding shares of capital stock entitled to vote thereon is required to amend or repeal, or to adopt any provision inconsistent with, several of the provisions of our certificate of incorporation.

Dividend Rights

Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of any series of preferred stock that we may designate and issue in the future.

Liquidation Rights

In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately our net assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock.

Rights and Preferences

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

Fully Paid and Nonassessable

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

Transfer Agent and Registrar

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

Preferred Stock

There are no shares of preferred stock currently outstanding. Our board of directors has the authority, without further action by our stockholders, to issue up to 50,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the dividend, voting and other rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

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 the 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, deterring or preventing a change in our control and may adversely affect the market price of the common stock and the voting and other rights of the holders of common stock. We have no current plans to issue any shares of preferred stock.

Warrants

As of March 15, 2024, we had outstanding pre-funded warrants to purchase up to 549,755 shares of common stock, which do not have an expiration date.

Options

As of December 31, 2023, options to purchase 1,451,985 shares of our common stock were outstanding under our 2023 Incentive Award Plan and options to purchase 1,088,294 shares of our common stock were outstanding under our 2020 Equity Incentive Plan.

Registration Rights***Purchase Agreement***

Under our Purchase Agreement, dated February 7, 2024, with the purchasers named therein (the Purchasers), for the Private Placement of (i) 8,339,169 shares of our common stock at a price of \$13.50 per share, and (ii) with respect to a certain Purchaser, Pre-Funded Warrants to purchase an aggregate of 549,755 shares of common stock in lieu of shares of common stock, at a purchase price of \$13.499 per Pre-Funded Warrant, the Company agreed to file a registration statement with the SEC within 60 days after the closing of the Private Placement (subject to certain exceptions) for purposes of registering the resale of the Shares and the Warrant Shares, to use its reasonable best efforts to have such registration statement declared effective within the time period set forth in the Purchase Agreement, and to keep such registration statement effective until the earliest of (i) the time as all of the Shares and Warrant Shares purchased by the Purchasers pursuant to the terms of the Purchase Agreement have been sold pursuant to the registration statement, or (ii) such time as the Shares and Warrant Shares become eligible for resale by non-affiliates without any volume limitations or other restrictions pursuant to Rule 144 under the Securities Act or any other rule of similar effect.

Investors' Rights Agreement

Under our investors' rights agreement, the holders party thereto (the holders) have the right to require us to register their shares under the Securities Act of 1933, as amended (the Securities Act), so that those shares may be publicly resold, or to include their shares in any registration statement we file, in each case as described below.

Demand registration rights

If at any time we are entitled under the Securities Act to register our shares on Form S-3, and the holders of at least twenty percent (20%) of the registrable securities request in writing that we effect a registration with respect to all or a part of the registrable securities then outstanding where the anticipated aggregate offering price, net of expenses, is at least \$4.0 million, we may be required to provide notice of such request to all holders of registrable securities and offer them the opportunity to participate in such registration, and to use commercially reasonable

efforts to effect such registration; provided, however, that we will not be required to effect such a registration if, among other things, within the preceding 12 months, we have already effected two registrations on Form S-3 for the holders of registrable securities.

If the holders requesting registration intend to distribute their shares by means of an underwritten offering, the underwriter of such offering will have the right to limit the number of shares to be underwritten for reasons related to the marketing of the shares in accordance with the cut-back provisions of the investors' rights agreements.

Piggyback registration rights

If at any time we propose to register any shares of our common stock under the Securities Act, subject to certain exceptions, the holders of registrable securities will be entitled to notice of the registration and to include their shares of registrable securities in the registration. If our proposed registration involves an underwritten offering, the managing underwriter of such offering will have the right to limit the number of shares to be underwritten for reasons related to the marketing of the shares in accordance with the cut-back provisions of the investors' rights agreement.

Indemnification

Our investors' rights agreement contains customary cross indemnification provisions, under which we are obligated to indemnify holders of registrable securities in the event of material misstatements or omissions in a registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Expenses

Other than underwriting discounts and commissions, we will be required to pay all expenses incurred by us related to any registration effected pursuant to the exercise of these registration rights. These expenses may include all registration and filing fees, printing expenses, fees and disbursements of our counsel, reasonable fees and disbursements of a counsel for the selling securityholders, blue sky fees and expenses and the expenses of any special audits incident to the registration.

Termination of Registration Rights

The registration rights terminate upon the earlier of (i) five years after the closing of our IPO or (ii) with respect to a particular holder, such time as Rule 144 or another similar exemption under the Securities Act is available for the sale of all shares by such holder without limitation during a three-month period without registration.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws

Some provisions of the DGCL, our certificate of incorporation and our bylaws could make the following transactions more difficult: an acquisition of us by means of a tender offer; an acquisition of us by means of a proxy contest or otherwise; or the removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions which provide for payment of a premium over the market price for our shares.

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

Undesignated Preferred Stock

The ability of our board of directors, without action by the stockholders, to issue up to 50,000,000 shares of undesignated preferred stock with voting or other rights or preferences as designated by our board of directors could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Stockholder Meetings

Our certificate of incorporation provides that a special meeting of stockholders may be called only by our chairperson of the board, chief executive officer or president or by a resolution adopted by a majority of our board of directors.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our bylaws establish advance notice procedures with respect to stockholder proposals to be brought before a stockholder meeting and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our certificate of incorporation and bylaws eliminate the right of stockholders to act by written consent without a meeting.

Staggered Board of Directors

Our board of directors is divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders. This system of electing and removing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Removal of Directors

Our certificate of incorporation and bylaws provide that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of the holders of at least two-thirds in voting power of the outstanding shares of stock entitled to vote in the election of directors.

Stockholders Not Entitled to Cumulative Voting

Our certificate of incorporation does not permit stockholders to cumulate their votes in the election of directors. Accordingly, the holders of a majority of the outstanding shares of our common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they choose, other than any directors that holders of our preferred stock may be entitled to elect.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the DGCL, which prohibits persons deemed to be "interested stockholders" from engaging in a "business combination" with a publicly held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors.

Choice of Forum

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf; (2) any action asserting a claim of breach of a fiduciary duty by any of our directors, officers or stockholders to us or our stockholders; (3) any action asserting a claim against us arising pursuant to any provision of the DGCL or our certificate of incorporation or bylaws; or (4) any action asserting a claim governed by the internal affairs doctrine. For instance, the provision would not apply to actions arising under federal securities laws, including suits brought to enforce any liability or duty created by the Securities Act, the Exchange Act, or the rules and regulations thereunder. Our certificate of incorporation further provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act, including all causes of action asserted against any defendant to such complaint. For the avoidance of doubt, this provision is intended to benefit and may be enforced by us, our officers and directors, the underwriters to any offering giving rise to such complaint, and any other professional entity whose profession gives authority to a statement made by that person or entity and who has prepared or certified any part of the documents underlying the offering. In any case, stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find these types of provisions to be inapplicable or unenforceable. Our certificate of incorporation also provides that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and to have consented to this choice of forum provision. It is possible that a court of law could rule that the choice of forum provision contained in our certificate of incorporation is inapplicable or unenforceable if it is challenged in a proceeding or otherwise.

Amendment of Charter and Bylaw Provisions

The amendment of any of the above provisions, except for the provision prohibiting cumulative voting, would require approval by holders of at least two-thirds in voting power of the outstanding shares of stock entitled to vote thereon.

The provisions of the DGCL, our certificate of incorporation and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in the composition of our board and management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement or free writing prospectus, summarizes certain general terms and provisions of the debt securities that we may offer under this prospectus. When we offer to sell a particular series of debt securities, we will describe the specific terms of the series in a supplement to this prospectus. We will also indicate in the supplement to what extent the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We may issue debt securities either separately, or together with, or upon the conversion or exercise of or in exchange for, other securities described in this prospectus. Debt securities may be our senior, senior subordinated or subordinated obligations and, unless otherwise specified in a supplement to this prospectus, the debt securities will be our direct, unsecured obligations and may be issued in one or more series.

The debt securities will be issued under an indenture between us and a trustee. We have summarized select portions of the indenture below. The summary is not complete. The form of the indenture has been filed as an exhibit to the registration statement of which this prospectus forms a part and you should read the indenture for provisions that may be important to you. Capitalized terms used in the summary and not defined herein have the meanings specified in the indenture.

General

The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and set forth or determined in the manner provided in a resolution of our board of directors, in an officer's certificate or by a supplemental indenture. The particular terms of each series of debt securities will be described in a prospectus supplement relating to such series (including any pricing supplement or term sheet).

We can issue an unlimited amount of debt securities under the indenture that may be in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will set forth in a prospectus supplement (including any pricing supplement or term sheet) relating to any series of debt securities being offered, the aggregate principal amount and the following terms of the debt securities, if applicable:

- the title and ranking of the debt securities (including the terms of any subordination provisions);
- the price or prices (expressed as a percentage of the principal amount) at which we will sell the debt securities;
- any limit on the aggregate principal amount of the debt securities;
- the date or dates on which the principal of the securities of the series is payable;
- the rate or rates (which may be fixed or variable) per annum or the method used to determine the rate or rates (including any commodity, commodity index, stock exchange index or financial index) at which the debt securities will bear interest, the date or dates from which interest will accrue, the date or dates on which interest will commence and be payable and any regular record date for the interest payable on any interest payment date;
- the place or places where principal of, and interest, if any, on the debt securities will be payable (and the method of such payment), where the securities of such series may be surrendered for registration of transfer or exchange, and where notices and demands to us in respect of the debt securities may be delivered;
- the period or periods within which, the price or prices at which and the terms and conditions upon which we may redeem the debt securities;
- any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund or analogous provisions or at the option of a holder of debt securities and the period or periods within which, the price or prices at which and in the terms and conditions upon which securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;

- the dates on which and the price or prices at which we will repurchase debt securities at the option of the holders of debt securities and other detailed terms and provisions of these repurchase obligations;
- the denominations in which the debt securities will be issued, if other than denominations of \$1,000 and any integral multiple thereof;
- whether the debt securities will be issued in the form of certificated debt securities or global debt securities;
- the portion of principal amount of the debt securities payable upon declaration of acceleration of the maturity date, if other than the principal amount;
- the currency of denomination of the debt securities, which may be United States Dollars or any foreign currency, and if such currency of denomination is a composite currency, the agency or organization, if any, responsible for overseeing such composite currency;
- the designation of the currency, currencies or currency units in which payment of principal of, premium and interest on the debt securities will be made;
- if payments of principal of, premium or interest on the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to these payments will be determined;
- the manner in which the amounts of payment of principal of, premium, if any, or interest on the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index;
- any provisions relating to any security provided for the debt securities;
- any addition to, deletion of or change in the Events of Default described in this prospectus or in the indenture with respect to the debt securities and any change in the acceleration provisions described in this prospectus or in the indenture with respect to the debt securities;
- any addition to, deletion of or change in the covenants described in this prospectus or in the indenture with respect to the debt securities;
- any depositories, interest rate calculation agents, exchange rate calculation agents or other agents with respect to the debt securities;
- the provisions, if any, relating to conversion or exchange of any debt securities of such series, including if applicable, the conversion or exchange price and period, provisions as to whether conversion or exchange will be mandatory, the events requiring an adjustment of the conversion or exchange price and provisions affecting conversion or exchange;
- any other terms of the debt securities, which may supplement, modify or delete any provision of the indenture as it applies to that series, including any terms that may be required under applicable law or regulations or advisable in connection with the marketing of the securities; and
- whether any of our direct or indirect subsidiaries will guarantee the debt securities of that series, including the terms of subordination, if any, of such guarantees.

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon declaration of acceleration of their maturity pursuant to the terms of the indenture. We will provide you with information on certain U.S. federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

If we denominate the purchase price of any of the debt securities in a foreign currency or currencies or a foreign currency unit or units, or if the principal of and any premium and interest on any series of debt securities is payable in a foreign currency or currencies or a foreign currency unit or units, we will provide you with information on the restrictions, elections, certain U.S. federal income tax considerations, specific terms and other information with respect to that issue of debt securities and such foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Transfer and Exchange

Each debt security will be represented by either one or more global securities registered in the name of The Depository Trust Company, or the Depository, or a nominee of the Depository (a book-entry debt security), or a certificate issued in definitive registered form (a certificated debt security) as set forth in the applicable prospectus supplement. Except as set forth under the heading "Global Debt Securities and Book-Entry System" below, book-entry debt securities will not be issuable in certificated form.

Certificated Debt Securities

You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. No service charge will be made for any transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection with a transfer or exchange.

You may effect the transfer of certificated debt securities and the right to receive the principal of, premium and interest on certificated debt securities only by surrendering the certificate representing those certificated debt securities and either reissuance by us or the trustee of the certificate to the new holder or the issuance by us or the trustee of a new certificate to the new holder.

Global Debt Securities and Book-Entry System

Each global debt security representing book-entry debt securities will be deposited with, or on behalf of, the Depository, and registered in the name of the Depository or a nominee of the Depository. Please see "Global Securities."

Covenants

We will set forth in the applicable prospectus supplement any restrictive covenants applicable to any issue of debt securities.

No Protection in the Event of a Change of Control

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions which may afford holders of the debt securities protection in the event we have a change in control or in the event of a highly leveraged transaction (whether or not such transaction results in a change in control) which could adversely affect holders of debt securities.

Consolidation, Merger and Sale of Assets

We may not consolidate with or merge with or into, or convey, transfer or lease all or substantially all of our properties and assets to any person (a successor person) unless:

- we are the surviving corporation or the successor person (if other than MLYS) is a corporation organized and validly existing under the laws of any U.S. domestic jurisdiction and expressly assumes our obligations on the debt securities and under the indenture; and
- immediately after giving effect to the transaction, no Default or Event of Default, shall have occurred and be continuing.

Notwithstanding the above, any of our subsidiaries may consolidate with, merge into or transfer all or part of its properties to us.

Events of Default

“Event of Default” means with respect to any series of debt securities, any of the following:

- default in the payment of any interest upon any debt security of that series when it becomes due and payable, and continuance of such default for a period of 90 days (unless the entire amount of the payment is deposited by us with the trustee or with a paying agent prior to the expiration of the 90-day period);
- default in the payment of principal of any security of that series at its maturity;
- default in the performance or breach of any other covenant or warranty by us in the indenture (other than a covenant or warranty that has been included in the indenture solely for the benefit of a series of debt securities other than that series), which default continues uncured for a period of 90 days after we receive written notice from the trustee or MLYS and the trustee receive written notice from the holders of not less than 25% in principal amount of the outstanding debt securities of that series as provided in the indenture;
- certain voluntary or involuntary events of bankruptcy, insolvency or reorganization of MLYS; or
- any other Event of Default provided with respect to debt securities of that series that is described in the applicable prospectus supplement.

No Event of Default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an Event of Default with respect to any other series of debt securities. The occurrence of certain Events of Default or an acceleration under the indenture may constitute an event of default under certain indebtedness of ours or our subsidiaries outstanding from time to time.

We will provide the trustee written notice of any Default or Event of Default within 30 days of becoming aware of the occurrence of such Default or Event of Default, which notice will describe in reasonable detail the status of such Default or Event of Default and what action we are taking or propose to take in respect thereof.

If an Event of Default with respect to debt securities of any series at the time outstanding occurs and is continuing (other than an Event of Default resulting from certain events of bankruptcy, insolvency or reorganization), then the trustee or the holders of not less than 25% in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the trustee if given by the holders), declare to be due and payable immediately the principal of (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) and accrued and unpaid interest, if any, on all debt securities of that series. In the case of an Event of Default resulting from certain events of bankruptcy, insolvency or reorganization, the principal (or such specified amount) of and accrued and unpaid interest, if any, on all outstanding debt securities will become and be immediately due and payable without any declaration or other act on the part of the trustee or any holder of outstanding debt securities. At any time after a declaration of acceleration with respect to debt securities of any series has been made, but before a judgment or decree for payment of the money due has been obtained by the trustee, the holders of a majority in principal amount of the outstanding debt securities of that series may rescind and annul the acceleration if all Events of Default, other than the non-payment of accelerated principal and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the indenture. We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an Event of Default.

The indenture provides that the trustee may refuse to perform any duty or exercise any of its rights or powers under the indenture unless the trustee receives indemnity satisfactory to it against any cost, liability or expense which might be incurred by it in performing such duty or exercising such right or power. Subject to certain rights of the trustee, the holders of a majority in principal amount of the outstanding debt securities of any series will have the

right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any trust or power conferred on the trustee with respect to the debt securities of that series.

No holder of any debt security of any series will have any right to institute any proceeding, judicial or otherwise, with respect to the indenture or for the appointment of a receiver or trustee, or for any remedy under the indenture, unless:

- that holder has previously given to the trustee written notice of a continuing Event of Default with respect to debt securities of that series; and
- the holders of not less than 25% in principal amount of the outstanding debt securities of that series have made written request, and offered indemnity or security satisfactory to the trustee, to the trustee to institute the proceeding as trustee, and the trustee has not received from the holders of not less than a majority in principal amount of the outstanding debt securities of that series a direction inconsistent with that request and has failed to institute the proceeding within 90 days.

Notwithstanding any other provision in the indenture, the holder of any debt security will have an absolute and unconditional right to receive payment of the principal of, premium and any interest on that debt security on or after the due dates expressed in that debt security and to institute suit for the enforcement of payment.

The indenture requires us, within 120 days after the end of our fiscal year, to furnish to the trustee a statement as to compliance with the indenture. If a Default or Event of Default occurs and is continuing with respect to the securities of any series and if it is known to a responsible officer of the trustee, the trustee shall mail to each holder of the securities of that series notice of a Default or Event of Default within 90 days after it occurs or, if later, after a responsible officer of the trustee has knowledge of such Default or Event of Default. The indenture provides that the trustee may withhold notice to the holders of debt securities of any series of any Default or Event of Default (except in payment on any debt securities of that series) with respect to debt securities of that series if the trustee determines in good faith that withholding notice is in the interest of the holders of those debt securities.

Modification and Waiver

We and the trustee may modify, amend or supplement the indenture or the debt securities of any series without the consent of any holder of any debt security:

- to cure any ambiguity, defect or inconsistency;
- to comply with covenants in the indenture described above under the heading "Consolidation, Merger and Sale of Assets;"
- to provide for uncertificated securities in addition to or in place of certificated securities;
- to add guarantees with respect to debt securities of any series or secure debt securities of any series;
- to surrender any of our rights or powers under the indenture;
- to add covenants or events of default for the benefit of the holders of debt securities of any series;
- to comply with the applicable procedures of the applicable depository;
- to make any change that does not adversely affect the rights of any holder of debt securities;
- to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;
- to effect the appointment of a successor trustee with respect to the debt securities of any series and to add to or change any of the provisions of the indenture to provide for or facilitate administration by more than one trustee; or

- to comply with requirements of the SEC in order to effect or maintain the qualification of the indenture under the Trust Indenture Act of 1939, as amended.

We may also modify and amend the indenture with the consent of the holders of at least a majority in principal amount of the outstanding debt securities of each series affected by the modifications or amendments. We may not make any modification or amendment without the consent of the holders of each affected debt security then outstanding if that amendment will:

- reduce the amount of debt securities whose holders must consent to an amendment, supplement or waiver;
- reduce the rate of or extend the time for payment of interest (including default interest) on any debt security;
- reduce the principal of or premium on or change the fixed maturity of any debt security or reduce the amount of, or postpone the date fixed for, the payment of any sinking fund or analogous obligation with respect to any series of debt securities;
- reduce the principal amount of discount securities payable upon acceleration of maturity;
- waive a default in the payment of the principal of, premium or interest on any debt security (except a rescission of acceleration of the debt securities of any series by the holders of at least a majority in aggregate principal amount of the then outstanding debt securities of that series and a waiver of the payment default that resulted from such acceleration);
- make the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security;
- make any change to certain provisions of the indenture relating to, among other things, the right of holders of debt securities to receive payment of the principal of, premium and interest on those debt securities and to institute suit for the enforcement of any such payment and to waivers or amendments; or
- waive a redemption payment with respect to any debt security.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all debt securities of that series waive our compliance with provisions of the indenture. The holders of a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all the debt securities of such series waive any past default under the indenture with respect to that series and its consequences, except a default in the payment of the principal of, premium or any interest on any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Defeasance of Debt Securities and Certain Covenants in Certain Circumstances

Legal Defeasance

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, we may be discharged from any and all obligations in respect of the debt securities of any series (subject to certain exceptions). We will be so discharged upon the irrevocable deposit with the trustee, in trust, of money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. Dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money or U.S. government obligations in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities.

This discharge may occur only if, among other things, we have delivered to the trustee an opinion of counsel stating that we have received from, or there has been published by, the United States Internal Revenue Service a ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit, defeasance and discharge and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit, defeasance and discharge had not occurred.

Defeasance of Certain Covenants

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, upon compliance with certain conditions:

- we may omit to comply with the covenant described under the heading “Consolidation, Merger and Sale of Assets” and certain other covenants set forth in the indenture, as well as any additional covenants which may be set forth in the applicable prospectus supplement; and
- any omission to comply with those covenants will not constitute a Default or an Event of Default with respect to the debt securities of that series (covenant defeasance).

The conditions include:

- depositing with the trustee money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. Dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal of, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities; and
- delivering to the trustee an opinion of counsel to the effect that the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit and related covenant defeasance and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit and related covenant defeasance had not occurred.

No Personal Liability of Directors, Officers, Employees or Securityholders

None of our past, present or future directors, officers, employees or securityholders, as such, will have any liability for any of our obligations under the debt securities or the indenture or for any claim based on, or in respect or by reason of, such obligations or their creation. By accepting a debt security, each holder waives and releases all such liability. This waiver and release is part of the consideration for the issue of the debt securities. However, this waiver and release may not be effective to waive liabilities under U.S. federal securities laws, and it is the view of the SEC that such a waiver is against public policy.

Governing Law

The indenture and the debt securities, including any claim or controversy arising out of or relating to the indenture or the securities, will be governed by the laws of the State of New York.

The indenture will provide that we, the trustee and the holders of the debt securities (by their acceptance of the debt securities) irrevocably waive, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to the indenture, the debt securities or the transactions contemplated thereby.

The indenture will provide that any legal suit, action or proceeding arising out of or based upon the indenture or the transactions contemplated thereby may be instituted in the federal courts of the United States of America located in the City of New York or the courts of the State of New York in each case located in the City of New York, and we, the trustee and the holder of the debt securities (by their acceptance of the debt securities) irrevocably submit to the non-exclusive jurisdiction of such courts in any such suit, action or proceeding. The indenture will further provide that service of any process, summons, notice or document by mail (to the extent allowed under any applicable statute or rule of court) to such party's address set forth in the indenture will be effective service of process for any suit, action or other proceeding brought in any such court. The indenture will further provide that we, the trustee and the holders of the debt securities (by their acceptance of the debt securities) irrevocably and unconditionally waive any objection to the laying of venue of any suit, action or other proceeding in the courts specified above and irrevocably and unconditionally waive and agree not to plead or claim any such suit, action or other proceeding has been brought in an inconvenient forum.

DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of shares of our common stock or preferred stock or of debt securities. We may issue warrants independently or together with other securities, and the warrants may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and the investors or a warrant agent. The following summary of material provisions of the warrants and warrant agreements are subject to, and qualified in their entirety by reference to, all the provisions of the warrant agreement and warrant certificate applicable to a particular series of warrants. The terms of any warrants offered under a prospectus supplement may differ from the terms described below. We urge you to read the applicable prospectus supplement and any related free writing prospectus, as well as the complete warrant agreements and warrant certificates that contain the terms of the warrants.

The particular terms of any issue of warrants will be described in the prospectus supplement relating to the issue. Those terms may include:

- the number of shares of common stock or preferred stock purchasable upon the exercise of warrants to purchase such shares and the price at which such number of shares may be purchased upon such exercise;
- the designation, stated value and terms (including, without limitation, liquidation, dividend, conversion and voting rights) of the series of preferred stock purchasable upon exercise of warrants to purchase preferred stock;
- the principal amount of debt securities that may be purchased upon exercise of a debt warrant and the exercise price for the warrants, which may be payable in cash, securities or other property;
- the date, if any, on and after which the warrants and the related debt securities, preferred stock or common stock will be separately transferable;
- the terms of any rights to redeem or call the warrants;
- the date on which the right to exercise the warrants will commence and the date on which the right will expire;
- a discussion of certain United States federal income tax considerations applicable to the warrants; and
- any additional terms of the warrants, including terms, procedures, and limitations relating to the exchange, exercise and settlement of the warrants.

Holders of equity warrants will not be entitled to:

- vote, consent or receive dividends;
- receive notice as shareholders with respect to any meeting of shareholders for the election of our directors or any other matter; or
- exercise any rights as shareholders of MLYS.

Each warrant will entitle its holder to purchase the principal amount of debt securities or the number of shares of preferred stock or common stock at the exercise price set forth in, or calculable as set forth in, the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

A holder of warrant certificates may exchange them for new warrant certificates of different denominations, present them for registration of transfer and exercise them at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement. Until any warrants to purchase debt securities are exercised, the holder of the warrants will not have any rights of holders of the debt securities that can be purchased

upon exercise, including any rights to receive payments of principal, premium or interest on the underlying debt securities or to enforce covenants in the applicable indenture. Until any warrants to purchase common stock or preferred stock are exercised, the holders of the warrants will not have any rights of holders of the underlying common stock or preferred stock, including any rights to receive dividends or payments upon any liquidation, dissolution or winding up on the common stock or preferred stock, if any.

DESCRIPTION OF UNITS

We may issue units consisting of any combination of the other types of securities offered under this prospectus in one or more series. We may evidence each series of units by unit certificates that we will issue under a separate agreement. We may enter into unit agreements with a unit agent. Each unit agent will be a bank or trust company that we select. We will indicate the name and address of the unit agent in the applicable prospectus supplement relating to a particular series of units.

The following description, together with the additional information included in any applicable prospectus supplement, summarizes the general features of the units that we may offer under this prospectus. You should read any applicable prospectus supplement and any applicable free writing prospectus that we may authorize to be provided to you related to the series of units being offered, as well as the complete unit agreements that contain the terms of the units. Specific unit agreements will contain additional important terms and provisions and we will file as an exhibit to the registration statement of which this prospectus is a part, or will incorporate by reference from another report that we file with the SEC, the form of each unit agreement relating to units offered under this prospectus.

If we offer any units, certain terms of that series of units will be described in the applicable prospectus supplement, including, without limitation, the following, as applicable:

- the title of the series of units;
- identification and description of the separate constituent securities comprising the units;
- the price or prices at which the units will be issued;
- the date, if any, on and after which the constituent securities comprising the units will be separately transferable;
- a discussion of certain United States federal income tax considerations applicable to the units; and
- any other terms of the units and their constituent securities.

GLOBAL SECURITIES

Book-Entry, Delivery and Form

Unless we indicate differently in any applicable prospectus supplement or free writing prospectus, the securities initially will be issued in book-entry form and represented by one or more global notes or global securities (collectively, global securities). The global securities will be deposited with, or on behalf of, The Depository Trust Company, New York, New York, as depository (DTC), and registered in the name of Cede & Co., the nominee of DTC. Unless and until it is exchanged for individual certificates evidencing securities under the limited circumstances described below, a global security may not be transferred except as a whole by the depository to its nominee or by the nominee to the depository, or by the depository or its nominee to a successor depository or to a nominee of the successor depository.

We understand that DTC is:

- a limited-purpose trust company organized under the New York Banking Law;
- “banking organization” within the meaning of the New York Banking Law;
- a member of the Federal Reserve System;
- a “clearing corporation” within the meaning of the New York Uniform Commercial Code; and
- a “clearing agency” registered pursuant to the provisions of Section 17A of the Exchange Act.

DTC holds securities that its participants deposit with DTC. DTC also facilitates the settlement among its participants of securities transactions, such as transfers and pledges, in deposited securities through electronic computerized book-entry changes in participants’ accounts, thereby eliminating the need for physical movement of securities certificates. “Direct participants” in DTC include securities brokers and dealers, including underwriters, banks, trust companies, clearing corporations and other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation (DTCC). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others, which we sometimes refer to as indirect participants, that clear through or maintain a custodial relationship with a direct participant, either directly or indirectly. The rules applicable to DTC and its participants are on file with the SEC.

Purchases of securities under the DTC system must be made by or through direct participants, which will receive a credit for the securities on DTC’s records. The ownership interest of the actual purchaser of a security, which we sometimes refer to as a beneficial owner, is in turn recorded on the direct and indirect participants’ records. Beneficial owners of securities will not receive written confirmation from DTC of their purchases. However, beneficial owners are expected to receive written confirmations providing details of their transactions, as well as periodic statements of their holdings, from the direct or indirect participants through which they purchased securities. Transfers of ownership interests in global securities are to be accomplished by entries made on the books of participants acting on behalf of beneficial owners. Beneficial owners will not receive certificates representing their ownership interests in the global securities, except under the limited circumstances described below.

To facilitate subsequent transfers, all global securities deposited by direct participants with DTC will be registered in the name of DTC’s partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of securities with DTC and their registration in the name of Cede & Co. or such other nominee will not change the beneficial ownership of the securities. DTC has no knowledge of the actual beneficial owners of the securities. DTC’s records reflect only the identity of the direct participants to whose accounts the securities are credited, which may or may not be the beneficial owners. The participants are responsible for keeping account of their holdings on behalf of their customers.

So long as the securities are in book-entry form, you will receive payments and may transfer securities only through the facilities of the depository and its direct and indirect participants. We will maintain an office or agency in the location specified in the prospectus supplement for the applicable securities, where notices and demands in

respect of the securities and the indenture may be delivered to us and where certificated securities may be surrendered for payment, registration of transfer or exchange.

Conveyance of notices and other communications by DTC to direct participants, by direct participants to indirect participants and by direct participants and indirect participants to beneficial owners will be governed by arrangements among them, subject to any legal requirements in effect from time to time.

Redemption notices will be sent to DTC. If less than all of the securities of a particular series are being redeemed, DTC's practice is to determine by lot the amount of the interest of each direct participant in the securities of such series to be redeemed.

Neither DTC nor Cede & Co. (or such other DTC nominee) will consent or vote with respect to the securities. Under its usual procedures, DTC will mail an omnibus proxy to us as soon as possible after the record date. The omnibus proxy assigns the consenting or voting rights of Cede & Co. to those direct participants to whose accounts the securities of such series are credited on the record date, identified in a listing attached to the omnibus proxy.

So long as securities are in book-entry form, we will make payments on those securities to the depository or its nominee, as the registered owner of such securities, by wire transfer of immediately available funds. If securities are issued in definitive certificated form under the limited circumstances described below and unless if otherwise provided in the description of the applicable securities herein or in the applicable prospectus supplement, we will have the option of making payments by check mailed to the addresses of the persons entitled to payment or by wire transfer to bank accounts in the United States designated in writing to the applicable trustee or other designated party at least 15 days before the applicable payment date by the persons entitled to payment, unless a shorter period is satisfactory to the applicable trustee or other designated party.

Redemption proceeds, distributions and dividend payments on the securities will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit direct participants' accounts upon DTC's receipt of funds and corresponding detail information from us on the payment date in accordance with their respective holdings shown on DTC records. Payments by participants to beneficial owners will be governed by standing instructions and customary practices, as is the case with securities held for the account of customers in bearer form or registered in "street name." Those payments will be the responsibility of participants and not of DTC or us, subject to any statutory or regulatory requirements in effect from time to time. Payment of redemption proceeds, distributions and dividend payments to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC, is our responsibility, disbursement of payments to direct participants is the responsibility of DTC, and disbursement of payments to the beneficial owners is the responsibility of direct and indirect participants.

Except under the limited circumstances described below, purchasers of securities will not be entitled to have securities registered in their names and will not receive physical delivery of securities. Accordingly, each beneficial owner must rely on the procedures of DTC and its participants to exercise any rights under the securities and the indenture.

The laws of some jurisdictions may require that some purchasers of securities take physical delivery of securities in definitive form. Those laws may impair the ability to transfer or pledge beneficial interests in securities.

DTC may discontinue providing its services as securities depository with respect to the securities at any time by giving reasonable notice to us. Under such circumstances, in the event that a successor depository is not obtained, securities certificates are required to be printed and delivered.

As noted above, beneficial owners of a particular series of securities generally will not receive certificates representing their ownership interests in those securities. However, if:

- DTC notifies us that it is unwilling or unable to continue as a depository for the global security or securities representing such series of securities or if DTC ceases to be a clearing agency registered under the Exchange Act at a time when it is required to be registered and a successor depository is not appointed

within 90 days of the notification to us or of our becoming aware of DTC's ceasing to be so registered, as the case may be;

- we determine, in our sole discretion, not to have such securities represented by one or more global securities; or
- an Event of Default has occurred and is continuing with respect to such series of securities,

we will prepare and deliver certificates for such securities in exchange for beneficial interests in the global securities. Any beneficial interest in a global security that is exchangeable under the circumstances described in the preceding sentence will be exchangeable for securities in definitive certificated form registered in the names that the depository directs. It is expected that these directions will be based upon directions received by the depository from its participants with respect to ownership of beneficial interests in the global securities.

Euroclear and Clearstream

If so provided in the applicable prospectus supplement, you may hold interests in a global security through Clearstream Banking S.A. (Clearstream) or Euroclear Bank S.A./N.V., as operator of the Euroclear System (Euroclear), either directly if you are a participant in Clearstream or Euroclear or indirectly through organizations which are participants in Clearstream or Euroclear. Clearstream and Euroclear will hold interests on behalf of their respective participants through customers' securities accounts in the names of Clearstream and Euroclear, respectively, on the books of their respective U.S. depositories, which in turn will hold such interests in customers' securities accounts in such depositories' names on DTC's books.

Clearstream and Euroclear are securities clearance systems in Europe. Clearstream and Euroclear hold securities for their respective participating organizations and facilitate the clearance and settlement of securities transactions between those participants through electronic book-entry changes in their accounts, thereby eliminating the need for physical movement of certificates.

Payments, deliveries, transfers, exchanges, notices and other matters relating to beneficial interests in global securities owned through Euroclear or Clearstream must comply with the rules and procedures of those systems. Transactions between participants in Euroclear or Clearstream, on one hand, and other participants in DTC, on the other hand, are also subject to DTC's rules and procedures.

Investors will be able to make and receive through Euroclear and Clearstream payments, deliveries, transfers and other transactions involving any beneficial interests in global securities held through those systems only on days when those systems are open for business. Those systems may not be open for business on days when banks, brokers and other institutions are open for business in the United States.

Cross-market transfers between participants in DTC, on the one hand, and participants in Euroclear or Clearstream, on the other hand, will be effected through DTC in accordance with the DTC's rules on behalf of Euroclear or Clearstream, as the case may be, by their respective U.S. depositories; however, such cross-market transactions will require delivery of instructions to Euroclear or Clearstream, as the case may be, by the counterparty in such system in accordance with the rules and procedures and within the established deadlines (European time) of such system. Euroclear or Clearstream, as the case may be, will, if the transaction meets its settlement requirements, deliver instructions to its U.S. depository to take action to effect final settlement on its behalf by delivering or receiving interests in the global securities through DTC, and making or receiving payment in accordance with normal procedures for same-day fund settlement. Participants in Euroclear or Clearstream may not deliver instructions directly to their respective U.S. depositories.

Due to time zone differences, the securities accounts of a participant in Euroclear or Clearstream purchasing an interest in a global security from a direct participant in DTC will be credited, and any such crediting will be reported to the relevant participant in Euroclear or Clearstream, during the securities settlement processing day (which must be a business day for Euroclear or Clearstream) immediately following the settlement date of DTC. Cash received in Euroclear or Clearstream as a result of sales of interests in a global security by or through a participant in Euroclear or Clearstream to a direct participant in DTC will be received with value on the settlement date of DTC but will be

available in the relevant Euroclear or Clearstream cash account only as of the business day for Euroclear or Clearstream following DTC's settlement date.

Other

The information in this section of this prospectus concerning DTC, Clearstream, Euroclear and their respective book-entry systems has been obtained from sources that we believe to be reliable, but we do not take responsibility for this information. This information has been provided solely as a matter of convenience. The rules and procedures of DTC, Clearstream and Euroclear are solely within the control of those organizations and could change at any time. Neither we nor the trustee nor any agent of ours or of the trustee has any control over those entities and none of us takes any responsibility for their activities. You are urged to contact DTC, Clearstream and Euroclear or their respective participants directly to discuss those matters. In addition, although we expect that DTC, Clearstream and Euroclear will perform the foregoing procedures, none of them is under any obligation to perform or continue to perform such procedures and such procedures may be discontinued at any time. Neither we nor any agent of ours will have any responsibility for the performance or nonperformance by DTC, Clearstream and Euroclear or their respective participants of these or any other rules or procedures governing their respective operations.

PLAN OF DISTRIBUTION

We may sell the securities from time to time pursuant to underwritten public offerings, negotiated transactions, block trades or a combination of these methods or to underwriters or dealers, through agents and/or directly to one or more purchasers or through a combination of such methods. The securities may be distributed from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Each time that we sell securities covered by this prospectus, we will provide a prospectus supplement or supplements that will describe the method of distribution and set forth the terms and conditions of the offering of such securities, including the offering price of the securities and the proceeds to us, if applicable.

Offers to purchase the securities being offered by this prospectus may be solicited directly. Agents may also be designated to solicit offers to purchase the securities from time to time and we may enter into arrangements for "at-the-market," equity line or similar transactions. Any agent involved in the offer or sale of our securities will be identified in a prospectus supplement.

If a dealer is utilized in the sale of the securities being offered by this prospectus, the securities will be sold to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale.

If an underwriter is utilized in the sale of the securities being offered by this prospectus, an underwriting agreement will be executed with the underwriter at the time of sale and the name of any underwriter will be provided in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for which they may act as agent. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis and an underwriter or dealer will purchase securities as a principal, and may then resell the securities at varying prices to be determined by the underwriter or dealer.

Any compensation paid to underwriters, dealers or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers will be provided in the applicable prospectus supplement. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions within the meaning of Section 2(a)(11) of the Securities Act. In addition, the underwriters' commissions, discounts or concessions may qualify as underwriters' compensation under the Securities Act and the rules of the Financial Industry Regulatory Authority, Inc. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, or to contribute to payments they may be required to make in respect thereof and to reimburse those persons for certain expenses.

If so indicated in the applicable prospectus supplement, we will authorize underwriters, dealers or other persons acting as our agents to solicit offers by certain institutions to purchase securities from us pursuant to delayed delivery contracts providing for payment and delivery on the date stated in each applicable prospectus supplement. Each contract will be for an amount not less than, and the aggregate amount of securities sold pursuant to such contracts shall not be less nor more than, the respective amounts stated in each applicable prospectus supplement.

Institutions with whom the contracts, when authorized, may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutions, but shall in all cases be subject to our approval.

Delayed delivery contracts will not be subject to any conditions except that:

- the purchase by an institution of the securities covered under that contract shall not at the time of delivery be prohibited under the laws of the jurisdiction to which that institution is subject; and
- if the securities are also being sold to underwriters acting as principals for their own account, the underwriters shall have purchased such securities not sold for delayed delivery. The underwriters and other persons acting as our agents will not have any responsibility in respect of the validity or performance of delayed delivery contracts.

One or more firms, referred to as "remarketing firms," may also offer or sell the securities, if a prospectus supplement so indicates, in connection with a remarketing arrangement upon their purchase. Remarketing firms will act as principals for their own accounts or as our agents. These remarketing firms will offer or sell the securities in accordance with the terms of the securities. Each prospectus supplement will identify and describe any remarketing firm and the terms of its agreement, if any, with us and will describe the remarketing firm's compensation. Remarketing firms may be deemed to be underwriters in connection with the securities they remarket. Remarketing firms may be entitled under agreements that may be entered into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

Any common stock offered pursuant to this prospectus will be listed on Nasdaq, but any other securities offered pursuant to this prospectus may or may not be listed on a national securities exchange. The applicable prospectus supplement will contain information, where applicable, as to any other listing, if any, on Nasdaq or any securities market or other securities exchange of the securities covered by the prospectus supplement. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involve the sale by persons participating in the offering of more securities than were sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option, if any. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time. Underwriters may also make a market in our common stock but will not be obligated to do so and may discontinue any market making at any time without notice. We can make no assurance as to the liquidity of or the existence, development or maintenance of trading markets for any of the securities.

We may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be named in the applicable prospectus supplement (or a post-effective amendment). In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

The specific terms of any lock-up provisions in respect of any given offering will be described in the applicable prospectus supplement.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

Selling Stockholders' Plan of Distribution

The selling stockholders, including their pledgees, donees, transferees, assignees and others who later come to hold some or all of the common stock covered by this prospectus, may from time to time offer some or all of the shares of common stock covered by this prospectus. To the extent required, this prospectus may be amended and supplemented from time to time to describe a specific plan of distribution.

The selling stockholders have agreed to pay any underwriting discounts and commissions or similar charges incurred for the sale of such shares of our common stock. We will not receive any proceeds from the sale by the selling stockholders of the shares of our common stock covered hereby.

The selling stockholders may sell the shares of common stock covered by this prospectus from time to time, and may also decide not to sell all or any of the shares of common stock that they are allowed to sell under this prospectus. The selling stockholders will act independently of us in making decisions regarding the timing, manner and size of each sale. These dispositions may be at fixed prices, at market prices prevailing at the time of sale, at prices related to such prevailing market prices, at varying prices determined at the time of sale, or at privately negotiated prices. Sales may be made by the selling stockholders in one or more types of transactions, which may include:

- purchases by underwriters, dealers and agents who may receive compensation in the form of underwriting discounts, concessions or commissions from the selling stockholders and/or the purchasers of the shares of common stock for whom they may act as agent;
- one or more block transactions, including transactions in which the broker or dealer so engaged will attempt to sell the shares of common stock as agent but may position and resell a portion of the block as principal to facilitate the transaction, or in crosses, in which the same broker acts as an agent on both sides of the trade;
- ordinary brokerage transactions or transactions in which a broker solicits purchases;
- purchases by a broker-dealer or market maker, as principal, and resale by the broker-dealer for its account;
- the pledge of shares of common stock for any loan or obligation, including pledges to brokers or dealers who may from time to time effect distributions of shares of common stock;
- short sales or transactions to cover short sales relating to the shares of common stock;
- one or more exchanges or over-the-counter market transactions;
- through distribution by the selling stockholders or their successors in interest to their members, general or limited partners, shareholders or other equityholders (or their respective members, general or limited partners, shareholders or other equityholders);
- privately negotiated transactions;
- the writing of options, whether the options are listed on an options exchange or otherwise;
- distributions to creditors and equity holders of the selling stockholders; and
- any combination of the foregoing, or any other available means allowable under applicable law.

The selling stockholders may also resell all or a portion of their common stock in open market transactions in reliance upon Rule 144 under the Securities Act provided they meet the criteria and conform to the requirements of Rule 144. A selling stockholder that is an entity may elect to make an in-kind distribution of common stock to its members, partners, stockholders or other equityholders pursuant to the registration statement of which this prospectus forms a part by delivering a prospectus. To the extent that such members, partners, stockholders or other equityholders are not affiliates of ours, such members, partners, stockholders or other equityholders would thereby receive freely tradable shares of common stock pursuant to a distribution pursuant to the registration statement of which this prospectus forms a part.

The selling stockholders may enter into sale, forward-sale and derivative transactions with third parties, or may sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those sale, forward-sale or derivative transactions, the third parties may sell securities covered by this prospectus or the applicable prospectus supplement, including in short sale transactions and by issuing securities that are not covered by this prospectus but are exchangeable for or represent beneficial interests in the common stock. The third parties also may use shares received under those sale, forward-sale or derivative arrangements or shares pledged by the selling stockholders or borrowed from the selling stockholders or others to settle such third-party sales or to close out any related open borrowings of common stock. The third parties may deliver this prospectus in connection with any such transactions. Any third party in such sale transactions will be an underwriter and will be identified in the applicable prospectus supplement (or a post-effective amendment to the registration statement of which this prospectus is a part).

In addition, the selling stockholders may engage in hedging transactions with broker-dealers in connection with distributions of common stock or otherwise. In those transactions, broker-dealers may engage in short sales of securities in the course of hedging the positions they assume with the selling stockholders. The selling stockholders may also sell securities short and redeliver securities to close out such short positions. The selling stockholders may also enter into option or other transactions with broker-dealers which require the delivery of securities to the broker-dealer. The broker-dealer may then resell or otherwise transfer such securities pursuant to this prospectus. The selling stockholders also may loan or pledge shares, and the borrower or pledgee may sell or otherwise transfer the common stock so loaned or pledged pursuant to this prospectus. Such borrower or pledgee also may transfer those shares of common stock to investors in our securities or the selling stockholders' securities or in connection with the offering of other securities not covered by this prospectus.

To the extent necessary, we may amend or supplement this prospectus from time to time to describe a specific plan of distribution. We will file a supplement to this prospectus, if required, upon being notified by the selling stockholders that any material arrangement has been entered into with a broker-dealer for the sale of shares through a block trade, offering or a purchase by a broker or dealer. The applicable prospectus supplement will set forth the specific terms of the offering of securities, including:

- the name of the selling stockholders and the participating broker-dealer;
- the number of shares of common stock offered;
- the price of such common stock;
- the proceeds to the selling stockholders from the sale of such common stock;
- the names of the underwriters or agents, if any;
- any underwriting discounts, agency fees or other compensation to underwriters or agents; and
- any discounts or concessions allowed or paid to dealers.

In connection with sales of common stock covered hereby, the selling stockholders and any underwriter, broker-dealer or agent and any other participating broker-dealer that executes sales for the selling stockholders may be deemed to be an "underwriter" within the meaning of the Securities Act. Accordingly, any profits realized by the selling stockholders and any compensation earned by such underwriter, broker-dealer or agent may be deemed to be

underwriting discounts and commissions. Because the selling stockholders may be deemed to be "underwriters" under the Securities Act, the selling stockholders must deliver this prospectus and any prospectus supplement in the manner required by the Securities Act. This prospectus delivery requirement may be satisfied through the facilities of Nasdaq in accordance with Rule 153 under the Securities Act.

We and the selling stockholders have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act. In addition, we or the selling stockholders may agree to indemnify any underwriters, broker-dealers and agents against, or contribute to any payments the underwriters, broker-dealers or agents may be required to make with respect to, civil liabilities, including liabilities under the Securities Act. Underwriters, broker-dealers and agents and their affiliates are permitted to be customers of, engage in transactions with, or perform services for us and our affiliates or the selling stockholders or their affiliates in the ordinary course of business.

The selling stockholders will be subject to applicable provisions of Regulation M of the Exchange Act and the rules and regulations thereunder, which provisions may limit the timing of purchases and sales of any of the common stock by the selling stockholders. Regulation M may also restrict the ability of any person engaged in the distribution of our common stock to engage in market-making activities with respect to our common stock. These restrictions may affect the marketability of such common stock.

In order to comply with applicable securities laws of some states, the common stock may be sold in those jurisdictions only through registered or licensed brokers or dealers. In addition, in certain states the common stock may not be sold unless it has been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirements is available. In addition, any common stock of the selling stockholders covered by this prospectus that qualifies for sale pursuant to Rule 144 under the Securities Act may be sold in open market transactions under Rule 144 rather than pursuant to this prospectus.

To the extent required, this prospectus may be amended and/or supplemented from time to time to describe a specific plan of distribution.

LEGAL MATTERS

Faegre Drinker Biddle & Reath LLP will pass upon certain legal matters relating to the issuance and sale of the securities offered hereby on behalf of Mineralys Therapeutics, Inc. Additional legal matters may be passed upon for us, the selling stockholders or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements of Mineralys Therapeutics, Inc. appearing in Mineralys Therapeutics, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2023, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon included therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the report of Ernst & Young LLP pertaining to such financial statements given on the authority of such firm as experts in accounting and auditing.

12,962,962 Shares



Common Stock

PROSPECTUS SUPPLEMENT

BofA Securities

Evercore ISI

Goldman Sachs & Co. LLC

Stifel

Wells Fargo Securities

LifeSci Capital

H.C. Wainwright & Co.

March 11, 2025
