Filed pursuant to Rule 424(b)(5)

Registration No. 333-294537

PROSPECTUS

Aardvark Therapeutics, Inc.
Up to $150,000,000
Common Stock

We have entered into an Equity Distribution Agreement, dated March 23, 2026 (the Equity Distribution Agreement), with Piper Sandler & Co. (Piper Sandler), relating to the sale of shares of our common stock, $0.00001 par value per share, offered by this prospectus. In accordance with the terms of the Equity Distribution Agreement, pursuant to this prospectus, we may offer and sell shares of our common stock having an aggregate offering price of up to $150,000,000 from time to time through or to Piper Sandler acting as sales agent.

Our common stock is listed on the Nasdaq Global Select Market under the symbol "AARD." On March 20, 2026, the closing price of our common stock on the Nasdaq Global Select Market was $4.07 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended (the Securities Act). Piper Sandler is not required to sell any specific number or dollar amount of securities but will act as a sales agent using commercially reasonable efforts, consistent with its normal trading and sales practices, on mutually agreed terms between Piper Sandler and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to Piper Sandler for sales of common stock sold pursuant to the Equity Distribution Agreement will be at a commission rate of 3.0% of the gross sales price per share sold under the Equity Distribution Agreement. In connection with the sale of common stock on our behalf, Piper Sandler will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Piper Sandler will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Piper Sandler with respect to certain liabilities, including liabilities under the Securities Act or the Securities Exchange Act of 1934, as amended (the Exchange Act). See the section titled "*Plan of Distribution*" beginning on page 18 of this prospectus for additional information regarding the compensation to be paid to Piper Sandler.

We are an "emerging growth company" and a "smaller reporting company," each as defined under the federal securities laws and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings with the Securities and Exchange Commission (the SEC). See "*Prospectus Summary – Implications of Being an Emerging Growth Company and a Smaller Reporting Company*".

Investing in our common stock involves a high degree of risk. See "*Risk Factors*" beginning on page 12 of this prospectus and under similar headings in the documents incorporated by reference into this prospectus for a discussion of certain risks and uncertainties you should consider before investing in shares of our common stock.

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

Piper Sandler

The date of this prospectus is April 3, 2026.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC using a "shelf" registration process. Under this shelf registration process, we may offer and sell shares of our common stock and preferred stock, depositary shares, various series of debt securities and warrants or rights to purchase any of such securities, either individually or in combination with other securities or in units, from time to time in one or more offerings, up to a total aggregate offering amount of $400,000,000. Under this prospectus, we may offer and sell shares of our common stock from time to time in one or more offerings, up to a total aggregate offering amount of $150,000,000 through or to Piper Sandler, acting as sales agent. These sales, if any, will be made pursuant to the terms of the Equity Distribution Agreement, which is filed as an exhibit to the registration statement of which this prospectus is a part. The $150,000,000 of shares of our common stock that may be sold under this prospectus are included in the $400,000,000 of our securities that may be sold under the registration statement.

We urge you to carefully read this prospectus, the documents incorporated by reference herein and therein and the additional information in the sections of this prospectus entitled "*Where You Can Find Additional Information*" and "*Incorporation of Certain Information by Reference*" before buying any of the securities being offered under this prospectus. These documents contain information you should consider when making your investment decision. To the extent that any statement that we make in this prospectus is inconsistent with statements made in any documents incorporated by reference, the statements made in this prospectus will be deemed to modify or supersede those made in such documents incorporated by reference; however, if any statement in one of these documents is inconsistent with a statement in another document having a later date and that is incorporated by reference herein, the statement in the document having the later date modifies or supersedes the earlier statement.

We have not, and Piper Sandler has not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and Piper Sandler is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted.

You should not assume that the information contained or incorporated by reference in this prospectus is accurate on any date subsequent to the date set forth on the front cover of this prospectus or on any date subsequent to the date of the document incorporated by reference, as applicable. Our business, financial condition, results of operations and prospects may have changed since those dates.

We are offering to sell, and seeking offers to buy, the securities described in this prospectus only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and the offering of the securities in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States. This prospectus does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

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

In this prospectus, unless otherwise indicated or required by the context, the terms "Aardvark," "we," "our," "us" and the "Company" refer to Aardvark Therapeutics, Inc. and its subsidiaries. General information about us can be found on our website at *https://aardvarktherapeutics.com*. The information on our website is for informational purposes only and should not be relied on for investment purposes. The information on our website is not incorporated by reference into this prospectus and should not be considered part of this or any other report filed with the SEC.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference herein, contains forward-looking statements about us and our industry within the meaning of Section 21E of the Exchange Act and Section 27A of the Securities Act, which statements involve substantial risks and uncertainties. Forward-looking statements generally relate to future events or our future financial or operating performance. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations and financial position, business strategy, product candidates, planned preclinical studies and clinical trials, results of preclinical studies and clinical trials, research and development plans and costs, plans for manufacturing, regulatory approvals, timing and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements because they contain words such as "may," "will," "should," "expects," "plans," "anticipates," "could," "intends," "target," "projects," "contemplates," "believes," "estimates," "predicts," "potential" or "continue" or the negative of these words or other similar terms or expressions that concern our expectations, strategy, plans or intentions, but the absence of these words does not mean that a statement is not forward-looking. Forward-looking statements contained in this prospectus and the documents incorporated by reference herein may include, but are not limited to, statements about:

- the initiation, timing, progress and results of our preclinical studies, clinical trials and research and development programs for our product candidates;
- our ability to demonstrate, and the timing of, preclinical proof-of-concept in vivo for our product candidates;
- our ability to successfully complete our clinical trials;
- our ability to quickly leverage our initial product candidates and to progress additional candidates;
- the prevalence of certain diseases and conditions we intend to treat and the size of the market opportunity for our product candidates;
- estimates of the number of patients with certain diseases and conditions we intend to treat and the number of subjects that we intend to enroll in our clinical trials;
- the likelihood of our clinical trials demonstrating safety and efficacy of our product candidates;
- the beneficial characteristics, including safety, efficacy and therapeutic effects, and potential advantages of our product candidates;
- the timing or likelihood of regulatory filings and approval for our product candidates;
- our ability to meet future regulatory standards with respect to our product candidates, if approved;
- our plans relating to the further development and manufacturing of our product candidates, including additional indications that we may pursue;
- our ability to identify additional product candidates or technologies with significant commercial potential that are consistent with our commercial objectives;
- the rate and degree of market acceptance and therapeutic benefits of our product candidates, if approved, and any other product candidates we may develop;
- the implementation of our strategic plans for our business, product candidates, research programs and technologies;

- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates;
- anticipated developments related to our competitors and our industry;
- our competitive position and ability to leverage the clinical, regulatory and manufacturing advancements to accelerate our clinical trials and regulatory approval of product candidates;
- the success of competing therapies that are or may become available;
- our ability to identify and enter into future license agreements and collaborations;
- the expected potential benefits of strategic collaborations with third parties and our ability to attract collaborators with development, regulatory, manufacturing or commercialization expertise;
- our ability to efficiently and cost-effectively conduct our current and future clinical trials;
- our reliance on third parties to conduct clinical trials of our product candidates;
- our reliance on third parties for the manufacture of our product candidates;
- our plans relating to sales strategy, manufacturing and commercializing our product candidates, if approved;
- our ability to attract and retain sales personnel, or to contract with a sales organization, if our product candidates are approved;
- anticipated regulatory and legal developments in the United States and foreign countries in which we may seek regulatory approval for our product candidates in the future;
- our ability to attract and retain key scientific and management personnel;
- our expected or anticipated financial performance;
- our ability to obtain funding for our operations necessary to complete further development and commercialization of our product candidates, if approved;
- our ability to maintain existing, and establish new, strategic collaborations, licensing, or other arrangements, including our ability to comply with our financial obligations pursuant to the terms of such agreements;
- the sufficiency of our existing capital resources to fund our future operating expenses and capital expenditure requirements;
- our expectations regarding the period during which we will qualify as an emerging growth company under the JOBS Act or a smaller reporting company; and
- estimates of our expenses, capital requirements and needs for additional financing.

We caution you that the forward-looking statements highlighted above do not encompass all of the forward-looking statements made in this prospectus or in the documents incorporated by reference in this prospectus.

These forward-looking statements are based on current expectations and beliefs concerning future developments and their potential effects. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond our control) or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described under the heading "*Risk Factors*" in this prospectus, in our Annual Report on Form 10-K for the year ended December 31, 2025, as filed with the SEC on March 23, 2026, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus, and elsewhere in the documents incorporated by reference into this prospectus. Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. There may be additional risks that we consider immaterial or which are unknown. It is not possible to predict or identify all such risks. Readers are cautioned not to place undue reliance on forward-looking statements because of the risks and uncertainties related to them and to the risk factors. We do not undertake any obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this prospectus, except as may be required under applicable securities laws. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, other strategic transactions or investments we may make or enter into.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of the statement is made, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and such statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

PROSPECTUS SUMMARY

This summary contains basic information about us and this offering. This summary highlights selected information contained elsewhere in, or incorporated by reference into, this prospectus. This summary is not complete and may not contain all of the information that may be important to you and that you should consider before deciding whether or not to invest in our securities. For a more complete understanding of Aardvark and this offering, you should carefully read this prospectus, including the information incorporated by reference into this prospectus, in its entirety. Investing in our securities involves risks that are described in the section of this prospectus entitled "Risk Factors," under the heading "Item 1A. Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2025, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus, and in our other filings with the SEC.

The Company

Overview

We are a clinical-stage biopharmaceutical company focused on developing novel, small-molecule therapeutics to activate innate homeostatic pathways for the treatment of metabolic diseases. We target biological pathways associated with alleviating hunger that we believe have the potential to deliver transformative outcomes for patients. We have focused our efforts on developing selective compounds, targeting Bitter Taste Receptors (TAS2Rs) for hunger-associated conditions. Our initial compounds target TAS2Rs expressed in the gut lumen, which normally respond to the chemicals in food and participate in the gut-brain axis. Our research has shown that activating these receptors can induce the secretion of endogenous signaling molecules, including cholecystokinin (CCK), peptide YY (PYY) and glucagon-like peptide-1 (GLP-1).

TAS2Rs are a family of 26 different nutrient-sensing G protein-coupled receptors (GPCRs) that are broadly expressed among vertebrates. TAS2Rs are present in the oral cavity to convey bitter taste and are highly expressed in many other tissues throughout the body where they are key in regulating metabolic and inflammatory pathways. CCK has long been recognized as a promising pharmaceutical target because its release is triggered with food and it helps suppress hunger, which is the feeling of discomfort that comes from a perception of not having eaten recently. We believe suppression of hunger could be complementary to the suppression of appetite reported from patients on GLP-1 receptor targeted treatments, which reduce the desirability of food. Previous approaches to directly agonize CCK receptors through exogenous molecules have been limited by safety concerns driven by systemic exposure, resulting in on-target, off-tissue toxicity, and in turn leading to adverse effects, such as pancreatitis. Our wholly-owned lead product candidate, ARD-101, is an oral, largely gut-restricted small-molecule agonist of certain TAS2Rs expressed in the gut lumen. ARD-101, in contrast to previous approaches to directly agonize CCK receptors, elicits the endogenous release of CCK by leveraging the body's natural response to TAS2R agonism. Besides our product candidates, we are not aware of any approved or other clinical-stage candidates targeting certain TAS2Rs.

ARD-101 has limited systemic absorption, which we believe reduces the potential for systemic toxicity and has contributed to ARD-101 being well-tolerated in our Phase 1 and 2 trials. We have completed a Phase 1 clinical trial of ARD-101 in healthy volunteers and a Phase 2 clinical trial in subjects with hyperphagia associated with Prader-Willi Syndrome (PWS). The Phase 2 clinical trial in hyperphagia associated with PWS evaluated two dosing regimens over 28 days followed by a 14-day withdrawal period. In Part 1 of the trial, 12 subjects completed the treatment period at a fixed dose of 200 mg delivered orally twice daily (BID). These 12 subjects that completed treatment had no significant treatment-related adverse events and, of these subjects, eight completed the Hyperphagia for Clinical Trial Questionnaire-9 (HQ-CT 9), with seven having complete post–database lock datasets. In this subgroup of seven, the mean decline at day 28 was approximately 9 points. In Part 2 of the trial, four subjects were dosed under a revised protocol: 400 mg BID for seven days, followed by 600 mg BID for seven days and ending with 800 mg BID for 14 days. The four subjects that completed the trial per protocol had only grade 1 treatment-related adverse events and showed a decrease in HQ-CT 9 of approximately eight points at 28 days. In our completed Phase 2 clinical trial in subjects with hyperphagia associated with PWS, ARD-101 was shown to be well-tolerated and demonstrated clinical activity through a reduction in Hyperphagia Questionnaire for Clinical Trials (HQ-CT) scores.

In the second quarter of 2025, we initiated dosing for a Phase 3 clinical trial for hyperphagia associated with PWS, which we refer to as the HERO (**H**unger **E**limination or **R**eduction **O**bjective) trial. We previously reached alignment with the FDA on a protocol for a Phase 3 clinical trial, which we initiated in December 2024. In August 2025, we submitted a protocol amendment to remove the use of anti-psychotics and insulin-requiring type 2 diabetes as exclusion criteria for the clinical trial. In October 2025, we reached alignment with the FDA on a protocol

amendment to lower the minimum age of eligibility to participate in the trial from 13 to 10 years of age. This change broadened the eligible trial population and expanded the potential addressable opportunity within PWS. In December 2025, we submitted an additional protocol amendment seeking to further lower the minimum age of eligibility to participate in the trial to 7 years of age. During the third quarter of 2025, we commenced enrollment for the HERO Open Label Extension (OLE) trial, which was available to patients completing the HERO trial and we initiated our first clinical sites in Australia. In January 2026, we announced over 50% completion of the target enrollment of 90 patients in the HERO trial and within the first quarter of 2026, we initiated clinical sites in the UK, South Korea and Canada.

On February 27, 2026, we voluntarily paused enrollment and dosing in the HERO and OLE trials following reversible cardiac observations in a healthy volunteer study and are currently reviewing the data and collaborating with the FDA to determine next steps. As a result, aspects of the trial design, development timeline and future clinical plans may change. Following the voluntary pause, we are reviewing the trial designs and protocols in collaboration with the FDA and the previously agreed protocol elements may be revisited.

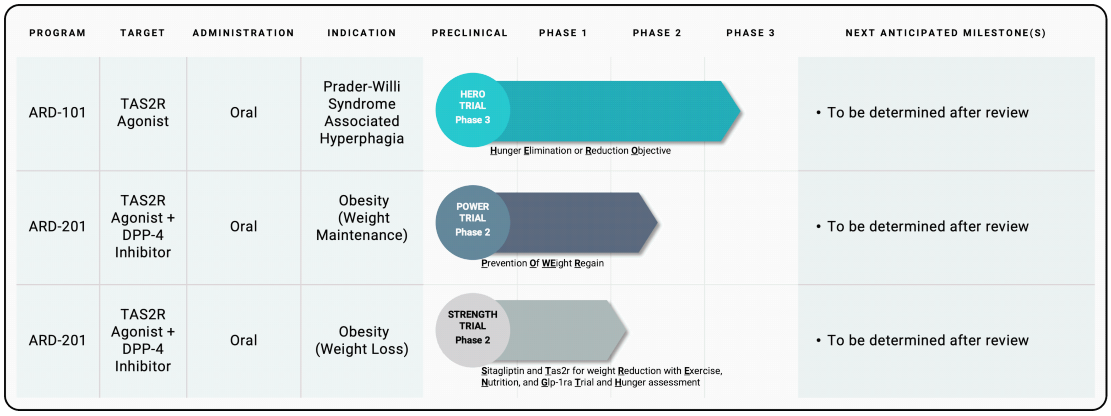
Our second TAS2R program, ARD-201, was planned to be a fixed-dose combination of ARD-101 and a dipeptidyl peptidase-4 (DPP-4) inhibitor for the treatment of obesity and obesity-related conditions. We previously initiated a Phase 2 clinical trial, which we referred to as the POWER (Prevention Of WEight Regain) trial, in December 2025, to explore the efficacy of ARD-201 in the prevention of weight regain among patients who have successfully lost over 15% of body weight on GLP-1RA therapy. In addition, we previously planned to initiate a second Phase 2 trial for ARD-201 in the first half of 2026, which we referred to as the STRENGTH (Sitagliptin and TAS2R for weight Reduction with Exercise, Nutrition, and GLP-1RA Trial and Hunger assessment) trial. Because ARD-201 contains ARD-101 as a component of the planned combination therapy, we are assessing the potential implications of the voluntary pause of the HERO trial on the ARD-201 program. Following this assessment, we have voluntarily paused the STRENGTH and POWER clinical trials while we complete our ongoing evaluation of the safety observations identified in the healthy volunteer study of ARD-101 and continue discussions with the FDA regarding next steps for the ARD-101 program. We expect to provide further guidance in the second quarter of 2026.

In preparation for these trials, we expanded our clinical management and regulatory capabilities, including hiring clinical, regulatory and quality personnel, and we expect to continue to need to expand our clinical management and regulatory capabilities and to rely on third parties to conduct our later stage or pivotal clinical trials in the future. However, the timing of additional staffing and operational expansion may be delayed as we evaluate next steps following the voluntary pause of the HERO trial and related clinical programs.

Our Pipeline

We are advancing the below portfolio of wholly-owned novel and proprietary small-molecule programs that we believe can induce satiety in patients with hunger-associated indications, as outlined below. As discussed above, certain clinical programs, including the HERO trial for ARD-101 and the POWER and STRENGTH trials for ARD-201, are currently paused while we evaluate safety observations and continue discussions with the FDA regarding next steps.

Our Hunger Associated TAS2R Pipeline



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

We qualify as an "emerging growth company" as that term is defined in the JOBS Act. For as long as we continue to be an emerging growth company, we intend to take advantage of exemptions from various reporting requirements applicable to other public companies but not to "emerging growth companies," including:

- not being required to have our independent registered public accounting firm audit our internal control over financial reporting under Section 404 of the Sarbanes-Oxley Act of 2002, as amended;
- permission to delay adopting new or revised accounting standards until such time as those standards apply to private companies;
- reduced disclosure obligations regarding executive compensation in our periodic reports and Annual Reports on Form 10-K; and
- exemptions from the requirements of holding non-binding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Under the JOBS Act, we will remain an emerging growth company until the earliest of:

- the last day of the fiscal year during which we have total annual gross revenues of $1.235 billion or more;
- the last day of the fiscal year following the fifth anniversary of the Initial Public Offering, or December 31, 2030;
- the date on which we have issued, during the previous three-year period, more than $1.0 billion in non-convertible debt securities; and
- the date on which we are deemed to be a "large accelerated filer" under the Exchange Act (i.e., the first day of the fiscal year after we have (1) more than $700.0 million in outstanding common equity held by our non-affiliates, measured each year on the last day of our second fiscal quarter, (2) been public for at least 12 months, and (3) are not eligible to be deemed a "smaller reporting company" because we do not meet the revenue test of the definition of "smaller reporting company", which includes an initial determination that our annual revenues are more than $100.0 million for the most recently completed fiscal year).

We are also a "smaller reporting company," meaning that the market value of our common stock held by non-affiliates is less than $700.0 million and our annual revenue is less than $100.0 million during the most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our common stock held by non-affiliates is less than $250.0 million or (ii) our annual revenue is less than $100.0 million during the most recently completed fiscal year and the market value of our common stock held by non-affiliates is less than $700.0 million. If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company, we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

We have elected to take advantage of certain of the reduced disclosure obligations regarding executive compensation in this prospectus and may elect to take advantage of other reduced reporting requirements in future filings with the SEC. As a result, the information that we provide to our stockholders may be different from the information you receive from other public reporting companies.

Corporate Information

We were incorporated in Delaware on May 17, 2017. Our principal executive offices are located at 4370 La Jolla Village Drive, Suite 1050, San Diego, CA 92122 and our telephone number is (858) 225-7696. We have two wholly-owned subsidiaries, Artisan Therapeutics, Inc., incorporated in Delaware in October 2024, and Ardia Therapeutics, Inc, incorporated in Delaware in February 2026. Our corporate website address is *https://aardvarktherapeutics.com*. Information contained on or connected to our website is not a part of, and is not incorporated into, this prospectus or the registration statement of which this prospectus is a part and the inclusion of our website address in this prospectus is an inactive textual reference. We are required to file annual, quarterly and current reports, proxy statements and other information with the SEC. You may obtain any of the documents filed by us with the SEC at no cost from the SEC's website at *http://www.sec.gov.*

THE OFFERING

Common stock offered by us	Up to an aggregate of $150,000,000 of shares of our common stock.
Common stock to be outstanding immediately after this offering	Up to 58,670,389 shares (as more fully described in the notes following this table), assuming sales of 36,855,036 shares of our common stock in this offering at an assumed offering price of $4.07 per share, the last reported sale price of our common stock on the Nasdaq Global Select Market on March 20, 2026. The actual number of shares of common stock issued will vary depending on the sales price under this offering.
Plan of Distribution	"At the market offering" as defined in Rule 415(a)(4) under the Securities Act that may be made from time to time through or to Piper Sandler acting as sales agent. See the section of this prospectus entitled "*Plan of Distribution*" beginning on page 18 of this prospectus for additional detail.
Use of Proceeds	We currently intend to use the net proceeds of this offering for general corporate purposes, which may include funding research and development, capital expenditures, working capital and general and administrative expenses. See the section of this prospectus entitled "*Use of Proceeds*" beginning on page 15 of this prospectus for additional detail.
Trading symbol	Our common stock is listed on the Nasdaq Global Select Market under the symbol "AARD."
Risk Factors	Investing in our securities involves a high degree of risk. See "*Risk Factors*" beginning on page 12 of this prospectus and other information included or incorporated by reference in this prospectus for a discussion of factors you should carefully consider before investing in our securities.

The number of shares of our common stock that will be outstanding immediately after this offering is based on 21,815,353 shares of common stock outstanding as of December 31, 2025, but excludes:

- 3,038,413 shares of common stock issuable upon the exercise of stock options outstanding under the Aardvark Therapeutics, Inc. 2025 Equity Incentive Plan and the Aardvark Therapeutics, Inc. 2025 Inducement Equity Incentive Plan as of December 31, 2025, with a weighted-average exercise price of $9.08 per share;
- up to 189,311 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Equity Incentive Plan as of December 31, 2025, which contains provisions that may increase its share reserve each year, and pursuant to which 1,090,767 shares of common stock were added to the reserve on January 1, 2026;
- up to 185,408 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Employee Stock Purchase Plan as of December 31, 2025, which contains provisions that may increase its share reserve each year, and pursuant to which 218,153 shares of common stock were added to the reserve on January 1, 2026; and
- up to 660,017 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Inducement Equity Incentive Plan as of December 31, 2025.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks and uncertainties described below. You should also consider the risks, uncertainties and assumptions discussed under the section entitled "Risk Factors" contained in our most recent Annual Report on Form 10-K, which is on file with the SEC, and is incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. If any of these risks actually occur, our business, financial condition, results of operations, cash flow and future growth prospects could be seriously harmed. This could cause the market price of our securities to decline, resulting in a loss of all or part of your investment. Please also carefully read the section below entitled "Special Note Regarding Forward-Looking Statements."

Risks Related to this Offering

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

We currently intend to use the net proceeds of this offering for general corporate purposes, which may include funding research and development, capital expenditures, working capital and general and administrative expenses as further described in the section of this prospectus entitled "*Use of Proceeds*". We will have broad discretion in the application of the net proceeds in the category of other working capital and general corporate purposes and investors will be relying on the judgment of our management regarding the application of the proceeds of this offering.

The precise amount and timing of the application of these proceeds will depend upon a number of factors, such as the timing and progress of our research and development efforts, our funding requirements and the availability and costs of other funds. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Depending on the outcome of our efforts and other unforeseen events, our plans and priorities may change and we may apply the net proceeds of this offering in different manners than we currently anticipate.

The failure by our management to apply these funds effectively could harm our business, financial condition and results of operations. Pending their use, we may invest the net proceeds from this offering in U.S. federal government or agency-issued obligations, FDIC-insured certificates of deposit, municipal bonds and money market accounts. These investments may not yield a favorable return to our stockholders.

You may experience immediate and substantial dilution.

The shares of our common stock sold in this offering, if any, will be sold from time to time at various prices. If you purchase shares in this offering at a price that is higher than the net tangible book value per share of our common stock, you would suffer immediate, and potentially substantial, dilution. Dilution or accretion with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering. The last reported sale price of our common stock on the Nasdaq Global Select Market on March 20, 2026 was $4.07 per share, which is less than our net tangible book value per share as of December 31, 2025. For a more detailed discussion regarding the foregoing and the accretion to new investors assuming that an aggregate of 36,855,036 shares of our common stock are sold at $4.07 for aggregate gross proceeds of approximately $150,000,000, please see the section of this prospectus entitled "*Dilution*". The exercise of outstanding stock options may result in further dilution of your investment.

The shares of common stock will be sold in "at the market" offerings, and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares in this offering at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and number of shares sold, and there is no minimum or maximum sales price. Investors may experience a decline in the value of their shares as a result of share sales made at prices lower than the prices they paid.

The actual number of shares we will issue under the Equity Distribution Agreement with Piper Sandler, at any one time or in total, is uncertain.

Subject to certain limitations in the Equity Distribution Agreement with Piper Sandler and compliance with applicable law, we have the discretion to deliver issuance notices to Piper Sandler at any time throughout the term of the Equity Distribution Agreement. The number of shares that are sold by Piper Sandler after delivering an issuance notice will fluctuate based on the market price of the common stock during the sales period and limits we set with Piper Sandler. Because the price per share of each share sold will fluctuate based on the market price of our common stock during the sales period, it is not possible at this stage to predict the number of shares or the gross proceeds to be raised in connection with those sales, if any, that will be ultimately issued.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

Because there are no current plans to pay cash dividends on our common stock for the foreseeable future, you may not receive any return on investment unless you sell shares of our common stock for a price greater than that which you paid for it.

We may retain future earnings, if any, for future operations, expansion and debt repayment and have no current plans to pay any cash dividends for the foreseeable future. Any decision to declare and pay dividends as a public company in the future will be made at the discretion of our board of directors and will depend on, among other things, our results of operations, financial condition, cash requirements, contractual restrictions and other factors that our board of directors may deem relevant. In addition, our ability to pay dividends may be limited by covenants of any existing and future outstanding indebtedness we may incur. As a result, you may not receive any return on an investment in our common stock unless you sell your shares of our common stock for a price greater than that which you paid for it.

Sales of a significant number of shares of common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

Sales of a substantial number of shares in the public markets, or the perception that such sales could occur, could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. We have agreed, without the prior written consent of Piper Sandler, and subject to certain exceptions set forth in the Equity Distribution Agreement, not to sell or otherwise dispose of any common stock or securities convertible into or exchangeable for shares of common stock, warrants or any rights to purchase or acquire common stock during the period beginning on the date a placement notice is delivered to Piper Sandler pursuant to the Equity Distribution Agreement and ending on the date of settlement of sales pursuant to such placement notice. We have further agreed, subject to certain exceptions set forth in the Equity Distribution Agreement, not to sell or otherwise dispose of any common stock or securities convertible into or exchangeable for shares of common stock, warrants or any rights to purchase or acquire common stock in any other “at the market offering” or continuous equity transaction prior to the termination of the Equity Distribution Agreement with Piper Sandler. Therefore, it is possible that we could issue and sell additional shares of our common stock in the public markets. We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

MARKET, INDUSTRY AND OTHER DATA

Unless otherwise indicated, information contained in this prospectus concerning our industry and the markets in which we operate, including our general expectations about our product candidates, market position, market opportunity, market size, competitive position and the incidence of certain medical conditions, is based on or derived from publicly available information released by industry analysts and third-party sources, independent market research, industry and general publications and surveys, governmental agencies, our internal research and our industry experience. The content of these third-party sources, except to the extent specifically set forth in this prospectus, does not constitute a portion of this prospectus and is not incorporated herein. Our estimates of the potential market opportunities for our product candidates include a number of key assumptions based on our industry knowledge and industry publications, the latter of which may be based on small sample sizes and fail to accurately reflect such information, and you are cautioned not to give undue weight to such estimates. Although we are responsible for all of the disclosure contained in this prospectus and we believe that our internal assumptions are reasonable, no independent source has verified such assumptions.

Industry publications and third-party research often indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information and such information is inherently imprecise. In some cases, we do not expressly refer to the sources from which this data is derived. In that regard, when we refer to one or more sources of this type of data in any paragraph, you should assume that other data of this type appearing in the same paragraph is derived from the same sources, unless otherwise expressly stated or the context otherwise requires. In addition, projections, assumptions and estimates of our future performance and the future performance of the industry in which we operate is necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described in "*Risk Factors*" and "*Special Note Regarding Forward-Looking Statements*" and elsewhere in this prospectus, and involve a number of assumptions and limitations. These and other factors could cause results to differ materially from those expressed in the estimates made by independent third parties and by us. You are cautioned not to give undue weight to any such information, projections and estimates.

USE OF PROCEEDS

We may issue and sell shares of our common stock having aggregate sales proceeds of up to $150,000,000 from time to time under this prospectus. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. There can be no assurance that, in the future, we will sell any shares under or fully utilize the Equity Distribution Agreement with Piper Sandler as a source of financing. We currently intend to use the net proceeds of this offering for general corporate purposes, which may include funding research and development, capital expenditures, working capital and general and administrative expenses. We may also use a portion of the net proceeds to in-license, acquire, or invest in complementary businesses, technology platforms, products, services, technologies or other assets. However, we do not have any agreements or commitments to enter into any material acquisitions or investments at this time.

The amounts of and timing of our use of the net proceeds from the sale of securities under this prospectus will depend on a number of factors. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from the sale of securities under this prospectus. Accordingly, we will retain broad discretion over the use of such proceeds. Pending application of the net proceeds as described above, we intend to invest the net proceeds from the offering that are not used as described above in U.S. federal government or agency-issued obligations, FDIC-insured certificates of deposit, municipal bonds and money market accounts.

DILUTION

If you purchase our common stock in this offering, your interest will be diluted to the extent the public offering price per share of our common stock exceeds the net tangible book value per share of common stock immediately after this offering. Dilution or accretion with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

Our net tangible book value as of December 31, 2025 was approximately $106.6 million, or $4.89 per share of common stock. Net tangible book value per share is determined by dividing the net of total tangible assets less total liabilities, by the aggregate number of shares of our common stock outstanding as of December 31, 2025.

After giving effect to the sale of our common stock pursuant to this prospectus in the aggregate amount of $150,000,000 at an assumed offering price of $4.07 per share, the last reported sale price of our common stock on the Nasdaq Global Select Market on March 20, 2026, and after deducting commissions and estimated aggregate offering expenses payable by us, our as adjusted net tangible book value as of December 31, 2025 would have been approximately $251.6 million, or $4.29 per share of common stock. This represents an immediate decrease in the net tangible book value of $0.60 per share to our existing stockholders and an immediate accretion in net tangible book value of $0.22 per share to new investors. While you will experience immediate accretion under the assumed public offering price of $4.07 per share, if you purchase shares at a price that is above our net tangible book value per share, you will experience immediate dilution.

The following table illustrates these changes in net tangible book value per share as a result of this offering:

Assumed public offering price per share of common stock		$ 4.07
Net tangible book value per share as of December 31, 2025	$ 4.89	
Decrease in net tangible book value per share attributable to this offering	(0.60)	
As adjusted net tangible book value per share after this offering		4.29
Accretion in net tangible book value per share to investors participating in this offering		$ 0.22

The table above assumes for illustrative purposes that an aggregate of 36,855,036 shares of our common stock are sold pursuant to this prospectus at a price of $4.07 per share, the last reported sale price of our common stock on the Nasdaq Global Select Market on March 20, 2026, for aggregate net proceeds of approximately $145.0 million, after deducting commissions and estimated aggregate offering expenses payable by us. The as adjusted information is illustrative only and will adjust based on the actual price to the public, the actual number of shares sold and other terms of the offering determined at the time shares of our common stock are sold pursuant to this prospectus. The shares sold in this offering, if any, will be sold from time to time at various prices.

The above discussion and table are based on 21,815,353 shares of common stock outstanding as of December 31, 2025, but excludes:

- 3,038,413 shares of common stock issuable upon the exercise of stock options outstanding under the Aardvark Therapeutics, Inc. 2025 Equity Incentive Plan and the Aardvark Therapeutics, Inc. 2025 Inducement Equity Incentive Plan as of December 31, 2025, with a weighted-average exercise price of $9.08 per share;
- up to 189,311 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Equity Incentive Plan as of December 31, 2025, which contains provisions that may increase its share reserve each year, and pursuant to which 1,090,767 shares of common stock were added to the reserve on January 1, 2026;
- up to 185,408 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Employee Stock Purchase Plan as of December 31, 2025, which contains provisions that may

increase its share reserve each year, and pursuant to which 218,153 shares of common stock were added to the reserve on January 1, 2026; and

- up to 660,017 shares of common stock available for future issuance under the Aardvark Therapeutics, Inc. 2025 Inducement Equity Incentive Plan as of December 31, 2025.

To the extent that options are exercised, new options or other equity awards are issued under our equity incentive plans, or we issue additional shares of common stock or other equity or convertible debt securities in the future, there may be dilution, or further dilution, to investors participating in this offering. Moreover, we may choose to raise additional capital because of market conditions or strategic considerations even if we believe that we have sufficient funds for our current or future operating plans. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

PLAN OF DISTRIBUTION

We have entered into the Equity Distribution Agreement with Piper Sandler, as our sales agent, under which we may offer and sell shares of our common stock from time to time through Piper Sandler. Pursuant to this prospectus, we may offer and sell up to $150,000,000 of our shares of common stock. A copy of the Equity Distribution Agreement is attached as an exhibit to the registration statement of which this prospectus forms a part.

Piper Sandler will use commercially reasonable efforts to sell on our behalf all shares of our common stock requested to be sold by us, consistent with its normal trading and sales practices, under the terms and subject to the conditions set forth in the Equity Distribution Agreement. We may instruct Piper Sandler not to sell our common stock if the sales cannot be effected at or above the price designated by us in any instruction. We or Piper Sandler may suspend the offering of our common stock upon proper notice and subject to other conditions, as further described in the Equity Distribution Agreement.

Upon delivery of a placement notice, and subject to our instructions in that notice and the terms and conditions of the Equity Distribution Agreement generally, Piper Sandler may sell our common stock by any method permitted by law that is deemed to be an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act, including sales made directly on or through the Nasdaq Global Select Market or on any other existing trading market for our common stock. Piper Sandler will provide written confirmation to us no later than the opening of trading on the Nasdaq Global Select Market on the day following each day in which our common stock is sold under the Equity Distribution Agreement. Each such confirmation will include the number of shares of our common stock sold on such day, the volume-weighted average price of the shares sold, the net proceeds to us and the compensation payable by us to Piper Sandler in connection with such sales.

We will pay Piper Sandler commissions for its services in acting as sales agent in the sale of our common stock. Piper Sandler will be entitled to compensation in an amount equal to 3.0% of the gross sales price of all common stock sold through it as sales agent under the Equity Distribution Agreement. We have also agreed to reimburse Piper Sandler for the out-of-pocket reasonable fees and disbursements of its legal counsel, in an amount not to exceed $100,000 in connection with the establishment of this at the market offering program in addition to certain ongoing disbursements of its legal counsel. We estimate that the total expenses for this offering, excluding compensation payable to Piper Sandler under the terms of the Equity Distribution Agreement, will be approximately $0.5 million.

Settlement for sales of our common stock will occur on the first business day following the date on which any such sales are made, or on some other date that is agreed upon by us and Piper Sandler in connection with a particular transaction, in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

We will report at least quarterly the number of shares of our common stock sold through Piper Sandler, as sales agent, under the Equity Distribution Agreement, and the net proceeds to us in connection with such sales.

Piper Sandler and its affiliates have from time to time provided, and may in the future provide, various investment banking, commercial banking, fiduciary and advisory services for us for which they have received, and may in the future receive, customary fees and expenses. Piper Sandler and its affiliates may from time to time engage in other transactions with and perform services for us in the ordinary course of their business.

In connection with the sale of our common stock on our behalf, Piper Sandler will be deemed to be an underwriter within the meaning of the Securities Act, and the compensation paid by us to Piper Sandler will be deemed to be underwriting commissions or discounts. We have agreed to indemnify Piper Sandler against specified liabilities, including liabilities under the Securities Act, or to contribute to payments that Piper Sandler may be required to make because of such liabilities.

The offering of our common stock pursuant to the Equity Distribution Agreement will terminate upon termination of the Equity Distribution Agreement. The Equity Distribution Agreement may be terminated by Piper Sandler or us at any time upon specified prior written notice.

LEGAL MATTERS

The validity of the issuance of the common stock offered by this prospectus will be passed upon for us by Paul Hastings LLP, Palo Alto, California. Piper Sandler & Co. is being represented in connection with this offering by Cooley LLP, New York, New York.

EXPERTS

The consolidated financial statements of Aardvark Therapeutics, Inc. as of December 31, 2025 and 2024 and for the years then ended, incorporated by reference in this Prospectus have been so incorporated in reliance on the report of BDO USA, P.C., an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities to be offered under this prospectus. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth or incorporated by reference in the registration statement of which this prospectus is a part and the exhibits to such registration statement. For further information with respect to us and the securities offered by this prospectus, we refer you to the registration statement of which this prospectus is a part and the exhibits to such registration statement. Statements contained in this prospectus as to the contents of any contract or any other document are not necessarily complete. If a contract or document has been filed as an exhibit to the registration statement or an exhibit to the reports or other documents incorporated by reference into this prospectus, please see the copy of the contract or document that has been filed. Each statement in this prospectus relating to a contract or document filed as an exhibit is qualified in all respects by the filed exhibit.

The SEC maintains an Internet website that contains reports, proxy statements and other information about issuers, like us, that file electronically with the SEC. The address of that website is *www.sec.gov*. You may also request a copy of these filings, at no cost, by writing us at 4370 La Jolla Village Drive, Suite 1050, San Diego, CA 92122 or telephoning us at (858) 225-7696.

We are subject to the information and reporting requirements of the Exchange Act and, in accordance with this law, file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information are available at the website of the SEC referred to above. We also maintain a website at *https://aardvarktherapeutics.com*. You may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on or connected to our website is not a part of, and is not incorporated into, this prospectus or the registration statement of which this prospectus is a part and the inclusion of our website address in this prospectus is an inactive textual reference.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference the information and reports we file with it into this prospectus, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus, and information we file later with the SEC will automatically update and supersede this information. We are incorporating by reference the documents listed below as of their respective dates of filing, which we have already filed with the SEC. Any report or information within any of the documents referred below that is furnished, but not filed, shall not be incorporated by reference into this prospectus.

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2025, filed with the SEC on March 23, 2026;
- our Current Reports on Form 8-K filed with the SEC on January 12, 2026, February 10, 2026, February 12, 2026, February 27, 2026 and March 24, 2026; and
- the description of our common stock set forth in our Registration Statement on Form 8-A (File No. 001-42513), filed with the SEC under Section 12(b) of the Exchange Act on February 10, 2025, including any amendments or reports filed for the purpose of updating such description, including the description of our common stock included as Exhibit 4.2 to our Annual Report on Form 10-K for the year ended December 31, 2024, filed with the SEC on March 31, 2025.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the termination of the offering of the securities made by this prospectus, and such future filings will become a part of this prospectus from the respective dates that such documents are filed with the SEC. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes hereof to the extent that a statement contained herein or in any other subsequently filed document which is also incorporated or deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may obtain any of the documents incorporated by reference in this prospectus from the SEC through the SEC's website at the address provided above. Documents incorporated by reference are also available from us, without charge. You may obtain documents incorporated by reference in this prospectus by requesting them in writing or by telephone at the following address or phone number:

Aardvark Therapeutics, Inc.
4370 La Jolla Village Drive, Suite 1050
San Diego, CA 92122
(858) 225-7696
Attn: Chief Executive Officer

You also may access these filings on our internet site at *https://aardvarktherapeutics.com*. Information contained on or connected to our website is not a part of, and is not incorporated into, this prospectus or the registration statement of which this prospectus is a part and the inclusion of our website address in this prospectus is an inactive textual reference. This prospectus is part of a registration statement we filed with the SEC. We have incorporated exhibits into the registration statement of which this prospectus is a part. You should read the exhibits carefully for provisions that may be important to you.

Up to $150,000,000

Common Stock

PROSPECTUS

Piper Sandler

April 3, 2026