



SENTI BIOSCIENCES HOLDINGS, INC.

25,555,024 Shares of Common Stock Offered by the Selling Securityholders

This prospectus relates to the offer and sale from time to time by the selling securityholders (the “Selling Securityholders”) or their permitted transferees, of up to 25,555,024 shares (the “Resale Shares”) of the common stock, par value \$0.0001 per share (the, “Common Stock”), of Senti Biosciences Holdings, Inc. (the “Company”) issuable upon the exchange of the Senior Secured Convertible Notes of Senti Holdings, Inc. (“Midco”), our subsidiary (the “Notes”). Unless the context otherwise requires, for purposes of this prospectus, the terms “we,” “us,” “our,” etc. refer to the Company.

The Resale Shares, and the Notes from which such Resale Shares are exchangeable, were collectively issued and sold to two accredited investors in a private placement transaction. The Notes were issued on May 20, 2026, August 14, 2026 and September 3, 2026. We are registering the offer and sale of the Resale Shares held by the Selling Securityholders to satisfy the registration rights granted pursuant to the Amended Purchase Agreement (as defined below) and Registration Rights Agreement (as defined below). While we will not receive any proceeds from the sale of Resale Shares by the Selling Securityholders pursuant to this prospectus, we have received approximately \$15.5 million in aggregate net proceeds from the issuances of the Notes.

This prospectus provides you with a general description of such securities and the general manner in which the Selling Securityholders or their pledgees, assignees or successors-in-interest may offer or sell the securities. More specific terms of any securities that the Selling Securityholders may offer or sell may be provided in a prospectus supplement that describes, among other things, the specific amounts and prices of the securities being offered and the terms of the offering. The prospectus supplement may also add, update or change information contained in this prospectus.

Our registration of the Resale Shares covered by this prospectus does not mean that either we or the Selling Securityholders will issue, offer or sell, as applicable, any of the Resale Shares. The Selling Securityholders may offer and sell the Resale Shares covered by this prospectus in a number of different ways and at varying prices. We provide more information about how the Selling Securityholders may sell the Resale Shares in the section entitled “Plan of Distribution.” The Selling Securityholders may be deemed to be “underwriters”, within the meaning of the Securities Act, of the Resale Shares that it is offering pursuant to this prospectus. The Selling Securityholders will bear all commissions and discounts, if any, attributable to their sales of the Resale Shares hereunder. We will bear all costs, expenses and fees in connection with the registration of the Resale Shares. We will not be paying any underwriting discounts or commissions in this offering.

The Resale Shares represent a substantial percentage of our total outstanding Common Stock as of September 9, 2026. The Resale Shares being offered for resale in this prospectus represent 82.1% of our current total outstanding Common Stock. Such shares of Common Stock will represent a substantial portion of our public float. If the Notes are exchanged for Common Stock, such shares of Common Stock will be significantly dilutive and may cause a decline in the market price of our securities.

You should read this prospectus and any prospectus supplement or amendment carefully before you invest in our securities.

Our Common Stock is listed on the Nasdaq Capital Market, or Nasdaq, under the symbol “SNTI”. On September 23, 2026, the last quoted sale price for the Common Stock as reported on Nasdaq was \$0.3380 per share.

We are an “emerging growth company” and a “smaller reporting company” under applicable federal securities laws and will be subject to reduced public company reporting requirements for so long as we remain an emerging growth company or a smaller reporting company.

Investing in our securities involves a high degree of risk. Before buying any securities, you should carefully read the discussion of the risks of investing in our securities in “[Risk Factors](#)” beginning on page 17 of this prospectus and any other risk factors contained in any applicable prospectus supplement and in the documents incorporated by reference herein and therein.

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

The date of this prospectus is September 24, 2026.

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SELECTED DEFINITIONS

As used in this prospectus, unless otherwise noted or the context otherwise requires, references to the following capitalized terms have the meanings set forth below:

“Business Combination Agreement” means the Business Combination Agreement, dated as of December 19, 2021, as amended or modified from time to time, including as amended by Amendment No. 1 to Business Combination Agreement, dated as of February 12, 2022, and Amendment No. 2, dated as of May 19, 2022, in each case, by and among Dynamics Special Purpose Corp., Explore Merger Sub, Inc. and our predecessor, Senti Biosciences, Inc.

“Board” means our board of directors.

“Bylaws” means the Amended and Restated Bylaws of the Company.

“Certificate of Incorporation” means the Amended and Restated Certificate of Incorporation of the Company, as amended and / or restated from time to time.

“DGCL” means the Delaware General Corporation Law, as may be amended from time to time.

“Exchange Act” means the Securities Exchange Act of 1934, as amended.

“JOBS Act” means the Jumpstart Our Business Startups Act of 2012.

“SEC” means the U.S. Securities and Exchange Commission.

“Securities Act” means the Securities Act of 1933, as amended.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and some of the information incorporated by reference includes forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act regarding, among other things, our plans, strategies, and prospects, both business and financial. These statements are based on the beliefs and assumptions of our management. Although we believe that our respective plans, intentions, and expectations reflected in or suggested by these forward-looking statements are reasonable, we cannot assure you that we will achieve or realize these plans, intentions, or expectations. Forward-looking statements are inherently subject to risks, uncertainties, and assumptions. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. Generally, statements that are not historical facts, including statements concerning possible or assumed future actions, business strategies, events or results of operations, and any statements that refer to projections, forecasts, or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. These statements may be preceded by, followed by or include the words “believes”, “estimates”, “expects”, “projects”, “forecasts”, “may”, “might”, “will”, “should”, “seeks”, “plans”, “scheduled”, “possible”, “anticipates”, “intends”, “aims”, “works”, “focuses”, “aspires”, “strives” or “sets out” or similar expressions. Forward-looking statements are not guarantees of performance. You should not put undue reliance on these statements which speak only as of the date hereof. Forward-looking statements contained in this prospectus include, for example, statements about:

- our expectations with respect to the closing of the Merger Agreement (as defined herein) and the transactions contemplated thereby, including the closing of the transactions contemplated by the Equity Commitment Letter (as defined below);
- the initiation, cost, timing, progress and results of our clinical trials, preclinical studies or research and development activities with respect to our current and potential future product candidates;
- the therapeutic potential of our product candidates, and the disease indications for which we intend to develop our product candidates;
- our ability to develop and advance our gene circuit platform technologies and to identify product candidates using our gene circuit platform technologies;
- our ability to advance our current and potential future product candidates into, and successfully initiate, conduct, enroll and complete clinical trials;
- our ability to develop and commercialize product candidates that we identify;
- our ability to obtain and maintain regulatory approval of our current and potential future product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate;
- our ability to manufacture our product candidates for clinical development and, if approved, for commercialization, and the timing and costs of such manufacture;
- our ability to source clinical and, if approved, commercial materials and supplies used to manufacture our product candidates;
- the performance of third parties in connection with the development of our product candidates, including third parties conducting our clinical trials as well as third-party suppliers;
- our ability to realize the benefits expected from the Framework Agreement and subsequent amendment, dated August 7, 2023 and December 10, 2024, respectively, by and among us, GeneFab, LLC and Valere Bio, Inc. and the transactions contemplated thereunder;
- our projected financial information, anticipated growth rate, and market opportunities;

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- the accuracy of our estimates and projections of financial information, including expenses, capital requirements, cash utilization, need for additional financing and market opportunities;
- our ability to maintain the listing of our common stock on Nasdaq, and the potential liquidity and trading of such securities;
- our ability to file and obtain clearance for any additional investigational new drug application, (“IND”), for any additional product candidates we may identify, and to successfully complete our ongoing Phase 1 clinical trial for SENTI-202 and additional clinical trials for any potential future product candidates;
- our ability to grow and effectively manage the growth of our operations;
- our ability to raise financing to fund our operations, if and when needed;
- our ability to obtain and maintain intellectual property protection for our technologies and any of our product candidates;
- our ability to successfully commercialize our current and any potential future product candidates;
- the rate and degree of market acceptance of our current and any potential future product candidates;
- regulatory developments in the United States and international jurisdictions;
- the potential benefits of strategic collaboration agreements and our ability, and the ability of our collaborators, to successfully develop technologies and product candidates under the respective collaborations;
- the potential liability from lawsuits and penalties related to our technologies, product candidates and current and future relationships with third parties, including relationships under strategic and financing transactions;
- our success in retaining or recruiting, or adapting to changes in, our officers, key employees, or directors;
- our ability to attract and retain key scientific and management personnel;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately under those arrangements;
- our ability to compete effectively with existing competitors and new market entrants;
- our future financial performance and capital requirements;
- our ability to implement and maintain effective internal controls;
- the impact of supply chain disruptions;
- the impact of any global health crises on our business, including our ongoing and potential future clinical trials and preclinical studies;
- any impacts on our business from unfavorable global economic conditions, including significant political, trade or regulatory developments, inflationary pressures, market volatility, acts of war and civil and political unrest;
- our ability to implement remediation plans to address the material weaknesses that are described in our most recent Annual Report on Form 10-K;
- our expectations regarding the period during which we qualify as a “smaller reporting company” as defined by Rule 12b-2 of the Securities Exchange Act of 1934 and “emerging growth company” under the JOBS Act; and
- other factors detailed under the section entitled “Risk Factors.”

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These and other factors that could cause actual results to differ from those implied by the forward-looking statements in this prospectus described under the heading “*Risk Factors*” and elsewhere in this prospectus. The risks described under the heading “*Risk Factors*” are not exhaustive. New risk factors emerge from time to time and it is not possible to predict all such risk factors, nor can we assess the impact of all such risk factors on our business or the extent to which any factor or combination of factors may cause actual results to differ materially from those contained in any forward-looking statements. All forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the foregoing cautionary statements. We undertake no obligations to update or revise publicly any forward-looking statements, whether as a result of new information, future events, or otherwise, except as required by law.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC using the “shelf” registration process. Under this shelf registration process, the Selling Securityholders may, from time to time, sell the Resale Shares in one or more offerings through any means described in the section entitled “*Plan of Distribution*.” While we will not receive any proceeds from the sale of Resale Shares by the Selling Securityholders pursuant to this prospectus, we have received approximately \$15.5 million in aggregate net proceeds from the issuances of the Notes.

A prospectus supplement may add, update or change information included in this prospectus. Any statement contained in this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in such prospectus supplement modifies or supersedes such statement. Any statement so modified will be deemed to constitute a part of this prospectus only as so modified, and any statement so superseded will be deemed not to constitute a part of this prospectus. You should rely only on the information contained in, or incorporated by reference into, this prospectus, and any applicable prospectus supplement. You should read both this prospectus and any applicable prospectus supplement or post-effective amendment to the registration statement together with the additional information to which we refer you in the sections of this prospectus entitled “*Where You Can Find More Information*.”

Neither we nor any Selling Securityholder have authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus or any applicable prospectus supplement or any free writing prospectuses prepared by or on behalf of us or to which we have referred you. Neither we nor any Selling Securityholder take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you.

This prospectus is an offer to sell only the securities offered hereby and only under circumstances and in jurisdictions where it is lawful to do so. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus. This prospectus is not an offer to sell securities, and it is not soliciting an offer to buy securities, in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus or any prospectus supplement is accurate only as of the date on the front of those documents and any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any applicable prospectus supplement, or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since those dates.

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

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

This prospectus contains references to trademarks, trade names and service marks belonging to other entities. Solely for convenience, trademarks, trade names and service marks referred to in this prospectus may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that

the applicable licensor will not assert, to the fullest extent under applicable law, its rights to these trademarks and trade names. We do not intend our use or display of other companies' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PROSPECTUS SUMMARY

This prospectus summary highlights certain information about us and selected information contained elsewhere in or incorporated by reference into this prospectus. This prospectus summary is not complete and does not contain all of the information that you should consider before making an investment decision. For a more complete understanding of us, you should read and consider carefully the more detailed information included or incorporated by reference in this prospectus and any applicable prospectus supplement or amendment, including the factors described under the heading “Risk Factors,” beginning on page 17 of this prospectus, as well as the information incorporated herein by reference, before making an investment decision. In this prospectus, unless the context requires otherwise, all references to “we,” “our,” “us,” “Senti,” the “Registrant,” and the “Company” refer to Senti Biosciences Holdings, Inc. and its subsidiaries.

Overview

We are a clinical-stage biotechnology company developing next-generation cell and gene therapies engineered with our gene circuit platform technologies for patients living with incurable diseases. Our mission is to create a new generation of smarter medicines that outsmart complex diseases using novel and unprecedented approaches. To accomplish this mission, we have built a synthetic biology platform that we believe may enable us to program next-generation cell and gene therapies with gene circuits. These gene circuits, which we created from novel and proprietary combinations of DNA sequences, are designed to reprogram cells with biological logic to sense inputs, compute decisions and respond to their respective cellular environments. Using gene circuits, our product candidates are designed to precisely kill cancer cells, spare healthy cells, increase specificity to target cells and control the expression of drugs even after administration.

We are applying our gene circuit technologies to develop a pipeline of medicines that use chimeric antigen receptor (“CAR”) white blood cells with the goal of addressing major challenges and providing potentially lifesaving treatments for people living with cancer. Our lead product candidate utilizes off-the-shelf healthy adult donor derived natural killer (“NK”) cells to create CAR-NK cells outfitted with gene circuit technologies in several oncology indications with high unmet need.

For information about our anticipated business after the Merger, see the section below titled “-Merger Agreement.”

2026 Private Placement

On April 27, 2026, we entered into a securities purchase agreement (the “Purchase Agreement”) with the CPIF II-7 Limited (the “Lead Investor”), pursuant to which our subsidiary, Midco, agreed to issue and sell up to \$40.0 million in aggregate principal amount of the Notes in up to two tranches to the Lead Investor. On September 1, 2026, the Purchase Agreement was amended pursuant to Amendment No. 1 to the Purchase Agreement, dated as of September 1, 2026 (the “Amendment”), by and among the Company, Midco, Senti Biosciences, Inc., a Delaware corporation and wholly owned subsidiary of Midco (“Opco”), the Lead Investor and NSG BioInnovation Fund, L.P. (“NSG”). Pursuant to the Amendment, the Notes may be issued, with the consent of the Lead Investor, in more than two tranches, and the Amendment authorized the issuance and sale of \$2.0 million in aggregate principal amount of Notes to NSG in a third tranche. The Selling Securityholders consist of the Lead Investor, an entity affiliated with Celadon Partners SPV 24 Limited, and NSG. Celadon Partners SPV 24 Limited, together with its affiliates, is currently our largest stockholder.

On May 20, 2026, we issued and sold to the Lead Investor the first tranche of Notes, in aggregate principal amount of \$10.0 million (the “Initial Notes”). Concurrently with the closing of the sale of the Initial Notes, we entered into a registration rights agreement with the Lead Investor (the “Registration Rights Agreement”), a

Guarantee (together with all our direct and indirect subsidiaries other than Midco) in favor of any holder of Notes, and a Voting Agreement with certain directors, all of our executive officers and the Lead Investor, pursuant to which these parties agreed to vote all shares of our common stock they hold in favor of (i) the Merger Agreement (as defined below) and (ii) the issuance of shares of our Common Stock underlying the Notes without giving effect to the Exchange Cap (as defined below). On August 14, 2026, the Lead Investor purchased an additional \$4.0 million of Notes. On September 3, 2026, NSG purchased \$2.0 million of additional Notes pursuant to the Purchase Agreement, as amended by the Amendment (the “Amended Purchase Agreement”), and in connection with such issuance, NSG entered into the Voting Agreement and joined the Registration Rights Agreement. Pursuant to the Registration Rights Agreement, we agreed to file a registration statement with the SEC registering the resale of the Common Stock underlying the Notes sold to the Selling Securityholders under the Amended Purchase Agreement. None of the securities issued pursuant to the Amended Purchase Agreement were initially registered under the Securities Act or any state securities laws, rather, we offered the securities in reliance on exemption from the registration requirements of the Securities Act by virtue of Section 4(a)(2) thereof and Rule 506 of Regulation D under the Securities Act. The registration statement of which this prospectus is a part relates to the offer and resale of the Resale Shares issuable upon the exchange of the \$16.0 million in aggregate principal amount of Notes outstanding as of the date of this prospectus.

Pursuant to the Amended Purchase Agreement, an additional up to \$30.0 million in aggregate principal amount of Notes may be issued after the first tranche, of which \$6.0 million of Notes has already been issued, subject to (i) the Lead Investor’s consent and (ii) the satisfaction of certain specified closing conditions. In addition, under the Amended Purchase Agreement, we would not be obligated to issue any Notes after the issuance of the Initial Notes unless the parties executed, within 30 days of the closing of the Initial Notes, definitive documents for a potential transaction pursuant to which, if consummated, an entity affiliated with the Lead Investor would merge with and into Midco and Midco would issue a contingent value right to our stockholders, which may pay out up to an aggregate of \$60.0 million in cash subject to the achievement of certain regulatory and sales milestones with respect to our product candidate, SENTI-202. The Merger Agreement, which constitutes such definitive documents, was executed on July 14, 2026, more than 30 days after the closing of the Initial Notes on May 20, 2026.

Notwithstanding the foregoing, pursuant to the Merger Agreement, no later than 21 days from the date of the Merger Agreement (unless Parent (as defined below) and we mutually agree in writing to a later date), Parent or an affiliate of Parent was required to fund and purchase additional Notes in accordance with the terms of the Amended Purchase Agreement, in an amount equal to \$6.0 million (the “Additional Notes”), minus the aggregate amount of net proceeds actually received by us from sales of our Common Stock pursuant to our existing at-the-market offering facility with Leerink Partners LLC (the “ATM Facility”). On August 14, 2026, the Lead Investor, an affiliate of Parent, purchased \$4.0 million of Additional Notes. On September 3, 2026, NSG purchased \$2.0 million of Additional Notes pursuant to the Amended Purchase Agreement. Pursuant to the Amendment, NSG’s purchase of Additional Notes was deemed to satisfy the remaining obligation of Parent to purchase Additional Notes under the Merger Agreement.

The Notes are exchangeable for shares of our Common Stock at an initial exchange price of \$0.6261 per share and are also convertible for shares of common stock of Midco, our direct, wholly owned subsidiary, at an initial conversion price of \$0.6261 per share, in each case subject to customary adjustments upon the occurrence of events specified in the Notes. In accordance with the rules of the Nasdaq Capital Market, we are not obligated to issue any shares of our Common Stock upon exchange beyond 19.99% of our Common Stock outstanding as of the date of the Purchase Agreement (the “Exchange Cap”) prior to the approval of our stockholders at a meeting to be held not later than August 31, 2026 to approve our issuance of shares of our Common Stock underlying the Notes without giving effect to the Exchange Cap (the “Issuance Approval”).

Based on the Schedule 13D/A filed by Celadon Partners, LLC, Celadon Partners SPV 24 Limited, Lead Investor and Parent (whom we collectively refer to as Celadon) with the SEC on July 16, 2026 (the “Celadon 13D/A”)

and the subsequent sale of \$4.0 million of Additional Notes to the Lead Investor, and assuming the Issuance Approval and the immediate exchange of the aggregate principal amount of \$14.0 million of Notes currently held by the Lead Investor for our Common Stock, the Lead Investor would beneficially own 60.0% of our outstanding Common Stock. In addition, we may still choose to sell up to a total of \$24.0 million in aggregate principal amount of Notes pursuant to the Amended Purchase Agreement. Assuming the voluntary sale by us to the Lead Investor of the remaining \$24.0 million in aggregate principal amount of Notes, that the Issuance Approval is obtained, and that the Lead Investor immediately exchanges all of its Notes for shares of our Common Stock, the Lead Investor would beneficially own 76.7% of our Common Stock. Further, pursuant to the terms of the Notes, if the Merger (as defined below) closes, we have the right to force the exchange of all outstanding Notes for shares of our Common Stock. For more information on the Merger Agreement, see the section below titled “—*Merger Agreement*”. See also “*Risk Factors—The sale of the securities registered for resale hereunder and future sales of substantial amounts of our securities in the public market (including the shares of Common Stock issuable upon exchange of the Notes), or the perception that such sales may occur, in particular by a significant and/or controlling stockholder, may cause the market price of our securities to decline significantly.*”

The Notes will not bear any interest unless an event of default has occurred. The Notes will have a maturity date of November 23, 2026, which is the date that is the first business day immediately following the date that is six months after the closing date of the Initial Notes (the “Maturity Date”). The Maturity Date may be extended at the option of any Selling Securityholder (i) if there is an event of default occurring on the Maturity Date or any event that, with the passage of time and the failure to cure would result in an event of default and (ii) through the date that is ten business days after the consummation of a change of control that is publicly announced or of which the Selling Securityholders received notice pursuant to the Notes. On the Maturity Date, if the Notes have not previously been converted or exchanged, Midco is required to pay the Selling Securityholders an amount in cash equal to 200% of all outstanding principal and accrued and unpaid interest.

Merger Agreement

Overview

On July 14, 2026, we entered into an agreement with Celadon Partners SPV 35 Limited (“Parent”), under which Parent would acquire substantially all of our existing business and pipeline through a merger transaction. Following the transaction, we are expected to remain a public company with a significantly streamlined operating structure, retaining certain intellectual property, collaborations and early-stage programs focused on our Regulator Dial™ technology platform while the remaining business will merge into the private company. Our stockholders, as well as certain holders of equity awards and warrants, will, upon closing of the transaction, have the right to receive certain contingent value rights that may provide future cash payments if specified development, regulatory and commercial milestones for SENTI-202 are achieved. The transaction is subject to stockholder approval and other customary closing conditions. See below for more detailed information about the transactions.

Agreement and Plan of Merger

On July 14, 2026, we entered into an Agreement and Plan of Merger (the “Merger Agreement”) with Parent, Senti Merger Sub, Inc., a Delaware corporation and wholly owned subsidiary of Parent (“Merger Sub”), Midco and Opco. Subject to the terms and conditions of the Merger Agreement, Merger Sub will be merged with and into Midco (the “Merger”), with Midco continuing as the surviving corporation and a wholly owned subsidiary of Parent.

Prior to the closing of the Merger, Opco will license or assign to us all intellectual property and contracts needed for us to advance (i) our program seeking a treatment for Rett Syndrome (the “Rett Syndrome program”),

utilizing our Regulator Dial technology and (ii) our platform of Regulator Dial-enabled armored tumor-infiltrating lymphocyte (“TIL”) therapies designed to address key limitations associated with current TIL approaches (the “TIL program”). After the closing of the Merger, we will retain a modest amount of cash to fund early work on these initial programs and will continue to incur the portion of our historical expenses related to operating as a public company. For more information on the Company’s pro forma financial condition, see the Company’s unaudited pro forma condensed consolidated financial information attached as Exhibit 99.1 to the registration statement of which this prospectus forms a part.

Pursuant to the Merger Agreement, at the effective time of the Merger (the “Effective Time”), each outstanding share of Midco common stock (other than shares owned by Midco or a subsidiary of Midco, which shares will be cancelled) will automatically be cancelled and converted into the right to receive the Milestone Payment Amount (as defined and described below) (the “Merger Consideration”). The right to receive the Merger Consideration shall be distributed by Midco to our stockholders and holders of RSUs and, upon exercise, holders of stock options and warrants (including certain entities and individuals affiliated with Celadon who hold any such securities) in the form of contractual contingent value rights (as described below, “CVRs”). Pursuant to the Merger Agreement, our Board of Directors or the Special Committee thereof shall approve, and Midco shall effect, the issuance and distribution of one CVR with respect to each share of our common stock that is issued and outstanding as of the CVR record date, which shall be a date no less than five days and no more than ten days following the date that the Merger closes.

At or prior to the Effective Time, Midco will execute and deliver the Contingent Value Rights Agreement in the form attached as Exhibit A to the Merger Agreement (the “CVR Agreement”).

In addition, immediately prior to the Effective Time, each stock option to purchase shares of our common stock (each, a “stock option”), whether vested or unvested, that is then outstanding will become immediately vested and exercisable in full. Prior to the Effective Time, our Board of Directors (or the committee administering the applicable equity incentive plan) shall take all actions necessary to provide that the post-termination exercise period applicable to each stock option that remains outstanding immediately prior to the Effective Time shall be extended so that such stock option will remain exercisable until the original expiration date of such stock option, notwithstanding any earlier termination of the holder’s employment or service with us or any of our subsidiaries; provided that each such stock option shall remain subject to earlier termination in accordance with the terms of the applicable equity incentive plan. Each stock option that is outstanding and unexercised as of immediately prior to the CVR record date shall entitle such holder to receive, upon exercise of such stock option pursuant to the terms thereof, a number of CVRs equal to the number of shares of our common stock that would have been issuable upon exercise in full of such stock option immediately prior to the CVR record date, reduced by an amount equal to the amount of any applicable withholding taxes, subject to and in accordance with the terms and conditions of such stock option and the CVR Agreement.

Immediately prior to the Effective Time, each restricted stock unit award in respect of shares of our common stock (each, a “RSU”), whether vested or unvested, that is outstanding immediately prior to the Effective Time shall become fully vested, automatically and without any action on the part of the holder thereof, and shall thereafter remain subject to settlement in accordance with the terms and conditions of the applicable equity incentive plan and the award agreement evidencing such RSU. Each RSU that is outstanding and unsettled as of immediately prior to the CVR record date shall entitle such holder to receive, upon settlement of such RSU pursuant to the terms thereof, a number of CVRs equal to the number of shares of our common stock subject to such RSU immediately prior to the CVR record date, reduced by an amount equal to the amount of any applicable withholding taxes, subject to and in accordance with the terms and conditions of such RSU and the CVR Agreement.

In addition, each warrant to purchase shares of our common stock (each, a “warrant”) that is outstanding and unexercised as of immediately prior to the CVR record date shall entitle such holder to receive, upon exercise of

such warrant pursuant to the terms thereof, a number of CVRs equal to the number of shares of our common stock that would have been issuable upon exercise in full of such warrant immediately prior to the CVR record date, reduced by an amount equal to the amount of any applicable withholding taxes, subject to and in accordance with the terms and conditions of such warrant and the CVR Agreement.

The consummation of the Merger is subject to certain closing conditions, including (i) the adoption of the Merger Agreement by (a) the holders of a majority of the outstanding shares of our common stock entitled to vote on the Merger Agreement at our stockholders meeting (the “Stockholder Approval”) and (b) holders of a majority of the votes cast by holders of shares of our common stock, other than shares beneficially owned, directly or indirectly, by Parent, Merger Sub or any of their respective affiliates, or with respect to which any of the foregoing has, directly or indirectly, the right to direct the voting thereof, that are present in person or represented by proxy and entitled to vote on the adoption of the Merger Agreement at our stockholders meeting, (ii) to the extent required, the receipt of specified regulatory approvals and (iii) the absence of any legal restraint prohibiting the consummation of the Merger. Moreover, each party’s obligation to consummate the Merger is subject to certain other conditions, including the accuracy of the other party’s representations and warranties in the Merger Agreement (subject to certain materiality qualifiers), the other party’s compliance in all material respects with its obligations under the Merger Agreement and the delivery of specified certificates and transaction documents. Consummation of the Merger is not subject to a financing condition.

The Merger Agreement contains customary representations and warranties of each of us, Midco, Opco, Parent and Merger Sub relating to their respective businesses and certain matters related to the Merger Agreement. The Merger Agreement contains certain covenants, including covenants providing (i) for each of the parties to use reasonable best efforts to cause the transactions under the Merger Agreement to be consummated, (ii) for us to carry on our business in the ordinary course consistent with past practice during the interim period between the execution of the Merger Agreement and completion of the Merger, including using commercially reasonable efforts to preserve our business operations, and (iii) for us not to engage in certain kinds of transactions during that period without Parent’s consent (which must not be unreasonably withheld, delayed or conditioned).

The Merger Agreement obligates us to abide by customary “no-shop” restrictions on our ability to solicit alternative takeover proposals from third parties and to provide non-public information to and enter into discussions or negotiations with third parties regarding alternative takeover proposals. Notwithstanding this obligation, prior to the receipt of the Stockholder Approval, if we receive an unsolicited alternative takeover proposal that our Board of Directors determines in good faith (after consultation with our legal counsel and financial advisor) constitutes, or would reasonably be expected to lead to, a Superior Company Proposal (as defined in the Merger Agreement and summarized below) and that the failure to take such action would be inconsistent with our fiduciary duties under applicable law, we may under certain circumstances furnish information to and engage in discussions or negotiations with the third party making such alternative takeover proposal. A “Superior Company Proposal” generally is any bona fide written takeover proposal to acquire 50% or more of the outstanding shares of our common stock or of the assets of ours and our subsidiaries, which proposal did not result from a breach of the “no-shop” restrictions and, in the good faith determination of our Board of Directors (after consultation with our legal counsel and financial advisor), is reasonably likely to be consummated in accordance with its terms and, if consummated, would result in a transaction more favorable from a financial point of view to our stockholders than the transactions under the Merger Agreement, taking into account changes to the Merger Agreement proposed by Parent in response thereto. Prior to us entering into a written definitive agreement for, or effecting a change in recommendation of our Board of Directors in connection with, a Superior Company Proposal, we must provide Parent with advance written notice of our intention to do so and Parent will generally have at least four business days after receipt of such notice to negotiate with us to make such adjustments in the terms and conditions of the Merger Agreement as would permit our Board of Directors not to enter into such a definitive agreement or change its recommendation.

Pursuant to the Merger Agreement, no later than 21 days from the date of the Merger Agreement (unless Parent and we mutually agree in writing to a later date), Parent or an affiliate of Parent is required to fund and purchase Additional Notes in accordance with the terms of the Purchase Agreement, in an amount equal to \$6.0 million, minus the aggregate amount of net proceeds actually received by us from sales of our Common Stock pursuant to our existing ATM Facility. Parent has the right, in its sole discretion, to first direct us to sell shares of our common stock pursuant to the ATM Facility, and we are required to use our commercially reasonable efforts, subject to applicable law, to effect such sales in accordance with the terms of the ATM Facility; provided that the amount, timing and pricing of any such sales shall be determined by Parent in its sole discretion following consultation with us. Net proceeds actually received by us from sales under the ATM Facility pursuant to the Merger Agreement will reduce, dollar-for-dollar, the amount required to be funded by Parent through the purchase of Additional Notes pursuant to the Merger Agreement. No such sales were made under the ATM Facility.

On August 14, 2026, the Lead Investor, an affiliate of Parent, purchased \$4.0 million of Additional Notes. On September 3, 2026, NSG purchased \$2.0 million of Additional Notes pursuant to the Amended Purchase Agreement. Pursuant to the Amendment, NSG's purchase of Additional Notes is deemed to satisfy the remaining obligation of Parent to purchase Additional Notes under the Merger Agreement.

Pursuant to the Merger Agreement, from and after the closing of the Merger, we and Parent have agreed to use commercially reasonable efforts to maintain the listing of our common stock on The Nasdaq Capital Market. In our case, this obligation is contingent on our receipt of sufficient capital funding for such efforts. On September 3, 2026, the Company entered into an equity commitment letter (the "Equity Commitment Letter") with an affiliate of Celadon pursuant to which, subject to the terms and conditions therein, such affiliate of Celadon agreed to purchase \$2.5 million of shares of our Common Stock at a price per share equal to the "Minimum Price" as defined in Nasdaq Listing Rule 5635(d). Under the Equity Commitment Letter, the shares will be purchased from the Company at or around the time of the closing of the Merger. Under the Equity Commitment Letter, the Company and such affiliate of Celadon (or its applicable affiliate) agreed to enter into a registration rights agreement at or prior to the closing of the Merger in form and substance reasonably acceptable to the Company and such affiliate of Celadon (or its applicable affiliate) that would provide such affiliate of Celadon (or its applicable affiliate) with customary demand and piggyback registration rights with respect to the shares of our Common Stock purchased under the Equity Commitment Letter. The Equity Commitment Letter also includes customary indemnification obligations of the Company. For more information on the Company's pro forma financial condition, see the Company's unaudited pro forma condensed consolidated financial information attached as Exhibit 99.1 to the registration statement of which this prospectus forms a part.

The Merger Agreement contains certain customary termination rights for us and Parent, including a right to terminate the Merger Agreement if the Merger is not completed by December 31, 2026 (the "Outside Date"). In addition, we may terminate the Merger Agreement if Parent or an affiliate of Parent fails to fund and purchase the Additional Notes in accordance with the Merger Agreement. The Merger Agreement further provides that, upon termination of the Merger Agreement under certain specified circumstances, including, among others, our termination of the Merger Agreement to enter into a written definitive agreement for a Superior Company Proposal or following a change in recommendation of our Board of Directors, we will be obligated to pay Parent a termination fee of \$2.5 million.

The foregoing description of the Merger Agreement does not purport to be complete and is qualified in its entirety by reference to the full text of such agreement, which is attached hereto as Exhibit 10.6 and is incorporated herein by reference.

The Merger Agreement has been included to provide investors with information regarding its terms. It is not intended to provide any other factual information about the Company, Midco, Opco, Parent or Merger Sub or any of their respective subsidiaries or affiliates. The representations and warranties of the parties contained in the Merger

Agreement have been made solely for the benefit of the parties thereto. In addition, such representations and warranties (i) have been made only for purposes of the Merger Agreement, (ii) may be subject to limits or exceptions agreed upon by the contracting parties, (iii) are subject to materiality qualifications contained in the Merger Agreement which may differ from what may be viewed as material by investors, (iv) were made only as of the date of the Merger Agreement or other specific dates and (v) have been included in the Merger Agreement for the purpose of allocating risk between the contracting parties rather than establishing matters as facts. Investors should not rely on the representations, warranties and covenants or any descriptions thereof as characterizations of the actual state of facts or condition of the Company, Midco, Opco, Parent or Merger Sub or any of their respective subsidiaries or affiliates. Additionally, the representations, warranties, covenants, conditions and other terms of the Merger Agreement may be subject to subsequent waiver or modification. Moreover, information concerning the subject matter of the representations, warranties and covenants may change after the date of the Merger Agreement, which subsequent information may or may not be fully reflected in our public disclosures.

Subject to satisfaction of the conditions to the consummation of the Merger, we expect the closing of the transactions contemplated by the Merger Agreement to occur in the second half of 2026.

As previously disclosed in our Current Reports on Form 8-K filed by the Company on May 1, 2026, May 26, 2026, and September 4, 2026, we entered into a Voting Agreement with all of our executive officers and certain of our directors, as well as Celadon, our largest stockholder, and NSG, in each case, whereby the parties agreed to vote in favor of the adoption and approval of the Merger and other transactions contemplated by the Merger Agreement.

Contingent Value Rights Agreement

At or immediately prior to the Effective Time, Midco and a rights agent will enter into the CVR Agreement, governing the terms of the CVRs to be received by our equityholders (including certain entities affiliated with Celadon). The CVRs are not transferable except under certain limited circumstances, will not be evidenced by a certificate or other instrument and will not be registered or listed for trading. The CVRs will not have any voting or dividend rights and will not represent any equity or ownership interest in Parent, Merger Sub, Midco, Opco or any of their affiliates.

Each CVR represents the right to receive a pro rata portion of the following contingent cash payments (the “Milestone Payment Amounts”):

- \$10.0 million if a Biologics License Application (“BLA”) is filed by or on behalf of Midco or any of its affiliates or licensees with, and is accepted by, the U.S. Food and Drug Administration (the “FDA”), or if the 60-day review period passes without rejection by the FDA, for SENTI-202, on or prior to the seventh anniversary of the Closing Date (the “Milestone Expiration Date”);
- \$20.0 million if FDA approval of the BLA for SENTI-202 is received by or on behalf of Parent or any of its affiliates or licensees on or prior to the Milestone Expiration Date; and
- \$30.0 million if the cumulative worldwide net sales (as defined in the CVR Agreement) of SENTI-202 exceeds \$200.0 million during the period commencing on the first commercial sale of SENTI-202 and ending on the Milestone Expiration Date.

There can be no assurance that the milestones will be achieved prior to the Milestone Expiration Date or that any resulting Milestone Payment Amounts will be paid.

The foregoing description of the CVR Agreement is not complete and is qualified in its entirety by reference to the Form of CVR Agreement, which is attached hereto as Exhibit 10.7 and is incorporated herein by reference.

Going Concern

We have incurred recurring losses and negative cash flows from operations and have an accumulated deficit that raises substantial doubt about our ability to continue as a going concern. Similarly, our independent registered public accounting firm included an explanatory paragraph in its report on our consolidated financial statements as of and for the year ended December 31, 2025 with respect to this uncertainty.

Company Information

Opco, our predecessor company, was incorporated under the laws of the State of Delaware on June 9, 2016. On April 24, 2026, Opco consummated a holding company reorganization by executing a tax-free merger, whereby it merged with and into Senti Biosciences Merger Sub, Inc., a newly formed Delaware corporation that is a subsidiary of a newly formed Delaware corporation, Midco. Midco is our subsidiary. We were incorporated under the laws of the State of Delaware on April 1, 2026. Following the reorganization, we became the successor issuer to Opco. Our principal executive offices are located at 2 Corporate Drive, First Floor, South San Francisco, California 94080, and our telephone number is (650) 239-2030. Our Common Stock is listed on the Nasdaq Capital Market under the symbol “SNTI”.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains an Internet website at www.sec.gov that contains reports, proxy and information statements and other information about issuers, like us, that file electronically with the SEC. We also maintain a website at <https://sentibio.com>. We make available, free of charge, on our investor relations website at <https://investors.sentibio.com>, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to these reports as soon as reasonably practicable after electronically filing or furnishing those reports to the SEC. Information contained on our website is not a part of or incorporated by reference into this prospectus and the inclusion of our website and investor relations website addresses in this prospectus is an inactive textual reference only.

Implications of Being an Emerging Growth Company

We are an “emerging growth company” as defined in the JOBS Act. As such, we may take advantage of reduced disclosure and other requirements otherwise generally applicable to public companies, including:

- exemption from the requirement to have our registered independent public accounting firm attest to management’s assessment of our internal control over financial reporting;
- exemption from compliance with the requirement of the Public Company Accounting Oversight Board, or PCAOB, regarding the communication of critical audit matters in the auditor’s report on the financial statements;
- reduced disclosure about our executive compensation arrangements; and exemption from the requirement to hold non-binding advisory votes on executive compensation or golden parachute arrangements.

We will remain an emerging growth company until the earliest to occur of: (1) the last day of the fiscal year in which we have at least \$1.235 billion in annual revenue; (2) the date we qualify as a “large accelerated filer,” with at least \$700.0 million of equity securities held by non-affiliates and our net sales for the year exceed \$100 million; (3) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period; and (4) December 31, 2026, the last day of the fiscal year ending after the fifth anniversary of our becoming a public company.

As a result of this status, we have taken advantage of reduced reporting requirements in this prospectus and may elect to take advantage of other reduced reporting requirements in our future filings with the SEC. In particular,

in this prospectus and our other SEC filings incorporated by reference herein, we have not included all of the executive compensation-related information that would be required if we were not an emerging growth company.

Implications of Being a Smaller Reporting Company

We are a “smaller reporting company” as defined under Rule 405 of the Securities Act. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates was less than \$250 million on the last business day of our most recently completed second fiscal quarter or (ii) our annual revenue was less than \$100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates was less than \$700 million on the last business day of our most recently completed second fiscal quarter. For so long as we remain a smaller reporting company, we are permitted and plan to rely on exemptions from certain disclosure and other requirements that are applicable to other public companies that are not smaller reporting companies.

THE OFFERING

Common Stock Offered by the Selling Securityholders	25,555,024 shares of Common Stock, issuable upon exchange of the Notes. See “ <i>Selling Securityholders</i> .”
Use of Proceeds	We will not receive any proceeds from the sale of the Resale Shares to be offered by any Selling Securityholder.
Trading Symbol	“SNTI”. Neither we nor our subsidiary, Midco, intends to list the Notes on the Nasdaq Capital Market or any other national securities exchange or any recognized trading system. Without an active market, the liquidity of the Notes will be limited.
Risk Factors	Any investment in the securities offered hereby is speculative and involves a high degree of risk. You should carefully consider the information set forth under “Risk Factors” and elsewhere in this prospectus, as well as the risk factors described or referred to in any documents incorporated by reference in this prospectus, and in any applicable prospectus supplement or amendment.

RISK FACTORS

Investing in the Common Stock involves a high degree of risk. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K, any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, including the risks related to the proposed Merger and the transactions contemplated by the Merger Agreement disclosed in Exhibit 99.2 to the Current Report on Form 8-K filed on July 15, 2026, 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 any applicable prospectus supplement before making an investment decision. The risks described in these documents are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be materially adversely affected. This could cause the trading price of our securities to decline, resulting in a loss of all or part of your investment. Please also carefully read the section titled "Cautionary Note Regarding Forward-Looking Statements."

Risks Related to this Offering by the Selling Securityholders

The sale of the securities registered for resale hereunder and future sales of substantial amounts of our securities in the public market (including the shares of Common Stock issuable upon exchange of the Notes), or the perception that such sales may occur, in particular by a significant and/or controlling stockholder, may cause the market price of our securities to decline significantly.

We are registering for resale 25,555,024 shares of Common Stock. The shares of Common Stock offered for resale by the Selling Securityholders in this prospectus represent approximately 82.0% of our total Common Stock outstanding as of June 30, 2026. Together with its affiliates, the Lead Investor is currently our largest stockholder, and assuming the Issuance Approval and the immediate exchange of the \$14.0 million in aggregate principal amount of Notes currently held by the Lead Investor for shares of Common Stock, the Lead Investor would, based on the Celadon 13D/A filed on July 16, 2026 and the subsequent sale of \$4.0 million of notes to the Lead Investor, beneficially own 60.0% of our common stock and become our controlling stockholder. As of the date of this prospectus, there are \$16.0 million in aggregate principal amount of Notes outstanding. Assuming the Issuance Approval, the exchange of all outstanding Notes for shares of Common Stock would result in the issuance of approximately 25,555,024 shares of common stock (based on the initial exchange price of \$0.6261 per share), which would increase our common stock outstanding as of June 30, 2026 from 31,144,754 shares to 56,699,778 shares (an increase of 82.1%).

Pursuant to the Amended Purchase Agreement, although we are not obligated to issue or sell any more Notes, we may choose to sell up to a total of \$24.0 million in aggregate principal amount of Notes pursuant to the Amended Purchase Agreement. Assuming that we sell \$24.0 million in aggregate principal amount of Notes to the Lead Investor, the Issuance Approval is obtained and Celadon immediately exchanges all of its Notes for shares of our common stock, Celadon would beneficially own 76.7% of our common stock. Assuming the Issuance Approval, the exchange of all \$40.0 million in aggregate principal amount of Notes for shares of Common Stock would result in the issuance of 63,887,558 shares of common stock, which would increase our common stock outstanding as of June 30, 2026 from 31,144,754 shares to 95,032,312 shares (an increase of 205.1%). In addition, pursuant to the terms of the Notes, if the Merger closes, we have the right to force the exchange of all outstanding Notes for shares of our common stock. Any such issuance could result in substantial dilution to our existing shareholders and could cause our stock price to decline.

The shares of Common Stock underlying the Notes offered for resale by the Selling Securityholders under this prospectus are not subject to volume limitations pursuant to Rule 144 under the Securities Act. We cannot predict

if and when any Selling Securityholder may sell such shares in the public markets. Furthermore, in the future, we may issue additional shares of Common Stock or other equity or debt securities convertible into shares of Common Stock.

Pursuant to the terms of the Notes and the rules of the Nasdaq Capital Market, we may not issue greater than 6,225,836 shares of Common Stock upon exchange of the Notes until we obtain the Issuance Approval in accordance with the rules of the Nasdaq Capital Market. We have agreed to call a meeting of our stockholders as promptly as practicable, but in any event not later than August 31, 2026, to seek such stockholder approval. At that meeting, Celadon, which is our largest stockholder, will be able to vote its pre-transaction shares, and has agreed to vote such shares, in favor of the Issuance Approval. The Issuance Approval requires the affirmative vote of the holders of a majority in voting power of the votes cast on such matter, and abstentions and broker non-votes, if any, will have no effect on the outcome of the vote on this proposal. Therefore, all 25,555,024 shares of our Common Stock, plus any shares of our common stock underlying Notes issued in the future, may become issuable in exchange for the Notes in the future, notwithstanding the limitations provided by the Notes and the rules the Nasdaq Capital Market that currently apply to the Notes.

The resale of the 25,555,024 shares of Common Stock registered by the registration statement of which this prospectus forms a part or any shares underlying Additional Notes in the public market, or the perception that the Selling Securityholders intend to sell such shares, could reduce the market price of our Common Stock.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of the Resale Shares covered by this prospectus.

DILUTION

As of June 30, 2026, the net tangible book value of our Common Stock was approximately \$(16.6) million, or \$(0.53) per share of Common Stock based on 31,144,754 shares of our Common Stock issued and outstanding. Net tangible book value per share as of a particular date represents our total tangible assets less total liabilities, divided by the number of shares of outstanding Common Stock.

After giving effect to the issuance of 25,555,024 shares of our Common Stock upon exchange of the Notes at an assumed price of \$0.63 per share, the pro forma net tangible book value as of June 30, 2026 would have been approximately \$(1.4) million or \$(0.03) per share. This represents an immediate increase in the net tangible book value of \$0.51 per share to existing stockholders and an immediate dilution of \$0.65 per share to the investors purchasing shares of our Common Stock in this offering at the assumed price per share.

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

Assumed price per share	\$0.63
Net tangible book value per share as of June 30, 2026	\$(0.53)
Increase in net tangible book value per share after giving effect to the issuance of shares of Common Stock issuable upon exchange of the Notes	\$ 0.51
Pro forma net tangible book value per share as of March 31, 2026	\$0.03
Dilution per share to new investors in this offering	\$0.65

Assuming the Selling Securityholders purchase the remaining Notes under the Amended Purchase Agreement having an aggregate principal amount of \$24.0 million, and exchange a total of \$40.0 million of Notes for 63,887,558 shares of our Common Stock at an assumed price of \$0.63 per share, the pro forma net tangible book value as of June 30, 2026 would have been approximately \$21.8 million or \$0.23 per share. This represents an immediate increase in the net tangible book value of \$0.31 per share to existing stockholders and an immediate dilution of \$0.33 per share to the investors purchasing shares of our Common Stock in this offering at the assumed price per share.

For purposes of calculating pro forma, as adjusted net tangible book value, the number of shares of our Common Stock outstanding prior to and after this offering is based on 31,144,754 shares of Common Stock outstanding as of June 30, 2026, assumes the issuance of 25,555,024 shares of our Common Stock in connection with this offering, and excludes, in each case, as of such date:

- 4,640,722 shares of Common Stock issuable upon the exercise of stock options outstanding at a weighted-average exercise price of \$12.84 per share;
- 31,735,500 shares of Common Stock issuable upon the exercise of warrants to purchase shares of Common Stock outstanding at a weighted-average exercise price of \$2.30 per share;
- 647,725 shares of Common Stock issuable upon the vesting and settlement of outstanding restricted stock units under our equity incentive plans;
- 2,398,620 shares of Common Stock available for issuance under our 2022 Equity Incentive Plan (the “2022 Plan”), plus any future increases in the number of shares of Common Stock reserved for issuance under our 2022 Plan pursuant to the evergreen provision of our 2022 Plan;
- 436,474 shares of Common Stock available for issuance under our 2022 Employee Stock Purchase Plan (the “ESPP”), plus any future increases in the number of shares of Common Stock reserved for issuance under our ESPP pursuant to the evergreen provision of our ESPP; and
- 2,140,718 shares of Common Stock available for issuance under our 2022 Inducement Plan.

To the extent that any of the outstanding options are exercised, warrants to purchase shares of Common Stock are exercised or restricted stock units vest, there would be further dilution to investors participating in this offering.

SELLING SECURITYHOLDERS

This prospectus relates to the reoffer and resale of up to 25,555,024 Resale Shares by the Selling Securityholders from time to time upon the exchange of the Initial Notes. We are registering the Resale Shares in order to permit the Selling Securityholders to offer the Resale Shares for resale from time to time. For additional information regarding the Resale Shares being offered by the Selling Securityholders pursuant to this prospectus, see “*Prospectus Summary—2026 Private Placement*” above. As a closing condition to the issuance of the Notes under the Amended Purchase Agreement, we entered into the Registration Rights Agreement pursuant to which we agreed to file a registration statement with the SEC registering the resale of the Common Stock underlying the Notes sold to the Selling Securityholders.

When we refer to the “*Selling Securityholders*” in this prospectus, we mean the persons listed in the table below, and the pledgees, donees, transferees, assignees, successors and others who later come to hold any of the Selling Securityholders’ interest in the Resale Shares after the date of this prospectus such that registration rights shall apply to those securities.

The following table is prepared based on information provided to us by the Selling Securityholders. It sets forth the name and address of the Selling Securityholders, the aggregate number of Resale Shares beneficially owned as of the date of this prospectus, and the aggregate number of Resale Shares that the Selling Securityholders may offer pursuant to this prospectus, and the number of Resale Shares beneficially owned by the Selling Securityholders after the sale of the securities offered hereby. We have based percentage ownership after this offering on 31,144,754 shares of common stock outstanding as of June 30, 2026. Unless otherwise described below, to our knowledge, the Selling Securityholders have not held any position or office or had any other material relationship with us or our affiliates during the three years prior to the date of this prospectus. In addition, except as otherwise described below, based on the information provided to us by the Selling Securityholders, the Selling Securityholders are not broker-dealers or affiliates of a broker-dealer.

We cannot advise you as to whether the Selling Securityholders will in fact sell any or all of such Resale Shares. In addition, the Selling Securityholders may sell, transfer or otherwise dispose of, at any time and from time to time, the Resale Shares in transactions exempt from the registration requirements of the Securities Act after the date of this prospectus. For purposes of this table, we have assumed that the Selling Securityholders will have sold all of the securities covered by this prospectus upon the completion of the offering. Any changed or new information given to us by the Selling Securityholders, including regarding the identity of, and the securities held by, each Selling Securityholder, will be set forth in a prospectus supplement or amendments to the registration statement of which this prospectus is a part, if and when necessary.

Please see the section entitled “*Plan of Distribution*” for further information regarding the Selling Securityholders’ method of distributing these securities.

<u>Name of Selling Securityholder</u>	<u>Common Stock Beneficially Owned Prior to this Offering</u>	<u>Common Stock Being Offered</u>	<u>Common Stock Owned After this Offering</u>	<u>Percentage of Shares of Common Stock beneficially owned after the Offering</u>
CPIF II-7 Limited ⁽¹⁾	32,137,646	22,360,646	9,777,000	20.8%
NSG BioInnovation Fund, L.P. ⁽²⁾	3,194,378	3,194,378	—	—

- (1) Common Stock being offered is issuable to CPIF II-7 Limited, an entity affiliated with Celadon, upon exchange of the Notes. Under the so-called “rule of three,” if voting and dispositive decisions regarding an entity’s securities are made by two or more individuals, and a voting and dispositive decision requires the approval of a majority of those individuals, then none of the individuals is deemed a beneficial owner of the entity’s securities. This is the situation with regard to Celadon. Based upon the foregoing analysis, no individual shareholder of Celadon exercises voting or dispositive control over any of the securities held by Celadon, even those in which he directly holds an economic interest.

Accordingly, none of them are deemed to have or share beneficial ownership of such shares. Mr. Donald Tang, a member of our board of directors, is a manager of Celadon Partners, LLC, which is the sole manager of Celadon, but does not have voting or investment power over the shares held by Celadon. The business address of Celadon is PO Box 500, Suite 210, 2nd Floor, Windward III, Regatta Office Park, Grand Cayman, KY1-1106, Cayman Islands.

- (2) Common Stock being offered is issuable to NSG BioInnovation Fund, L.P., upon exchange of the Notes. The business address of NSG BioInnovation Fund, L.P. is c/o Maples Corporate Services Limited, PO Box 309, Ugland House, Grand Cayman, KY1-1104, Cayman Islands. Timothy Lu, a member of our board of directors and our Chief Executive Officer, has a passive financial interest in NSG, and his brother is a founding partner of NSG.

Relationship with Selling Securityholder

Pursuant to a letter agreement executed with Celadon in December 2024, Celadon had the right to designate certain directors to our Board, subject to the terms and conditions provided in its letter agreement. On December 9, 2024, Donald Tang was appointed as a director of our predecessor's Board of Directors pursuant to the letter agreement with Celadon. On March 7, 2025, Feng Hsiung was appointed as a director of our predecessor's Board of Directors and on July 18, 2025, Bryan Baum was appointed as a director of our predecessor's Board of Directors pursuant to a request by Celadon under terms of the same letter agreement. In connection with our reorganization, we, Celadon and our predecessor entered into an amended and restated letter agreement adding us as a party to the letter agreement, and the same three directors were appointed to our Board. As of the date of this prospectus, Celadon held three of the eight seats on the Board.

We have entered into certain agreements, which have been amended from time to time, with GeneFab, LLC, a Delaware limited liability company, or GeneFab, and Valere Bio, Inc., a Delaware corporation and the parent company of GeneFab, or Valere, which is wholly owned by a company managed by Celadon, for the transfer of certain assets, provision of services (for which we may be reimbursed) and sublease of our premises in California as well as license of our intellectual property rights to conduct manufacturing services. These agreements with GeneFab include a letter agreement whereby GeneFab has the option to purchase certain shares of our common stock, subject to the terms specified therein. This letter agreement relating to the option was assigned to Valere Holdings LLC, an affiliate of GeneFab, and it was terminated in April 2026. In addition, we entered into an economic share agreement in August 2023, pursuant to which we were entitled to receive 10% of the realized gains of GeneFab's parent company, and this agreement was terminated in April 2026. Donald Tang, who is currently a member of our Board, is a manager of Celadon Partners, LLC, which is the sole manager of Celadon.

In December 2024, we sold certain warrants and shares of convertible preferred stock to Celadon, and the shares of Common Stock underlying such securities were registered for resale pursuant to a registration rights agreement.

On April 27, 2026, we entered into a securities purchase agreement with the Lead Investor for the sale of the Notes. On May 20, 2026, we issued and sold the Initial Notes and entered into certain ancillary agreements with or in favor of the Lead Investor. For more information, see the section above titled "*Prospectus Summary—2026 Private Placement*".

On July 14, 2026, we entered into the Merger Agreement with affiliates of Celadon. For more information, see the section above titled "*Prospectus Summary—Merger Agreement*".

On August 14, 2026, Midco issued \$4.0 million of Notes to the Lead Investor.

On September 1, 2026, the parties to the Purchase Agreement and NSG executed the Amendment to amend the Purchase Agreement.

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On September 3, 2026, Midco issued \$2.0 million of Notes to NSG.

On September 3, 2026, the Company entered into the Equity Commitment Letter with an affiliate of Celadon pursuant to which, subject to the terms and conditions therein, such affiliate of Celadon agreed to purchase \$2.5 million of shares of the Company's common stock.

Other than these relationships with Celadon and NSG, the Selling Securityholders have not had material relationships with us or any of our predecessors within the past three years, other than as a result of the ownership of shares of Common Stock, the Notes or other securities.

DESCRIPTION OF SECURITIES

The following description summarizes certain important terms of our capital stock as of the date of this prospectus as specified in our Certificate of Incorporation and our Bylaws. Because the following description is only a summary, it does not contain all the information that may be important to you. For a complete description of the matters set forth in this section titled “Description of Securities,” you should refer to the Charter, the Bylaws, the Investor Rights and Lock-up Agreement dated June 8, 2022, by and among us (as successor to Senti Biosciences, Inc.) and the parties listed therein as Investors (the “Investor Rights and Lock-Up Agreement”), and the Registration Rights Agreement dated December 2, 2024 between us (as successor to Senti Biosciences, Inc.) and the parties listed therein, which are included as exhibits to Senti Biosciences, Inc.’s Annual Report on Form 10-K for the year ended December 31, 2025, and to the applicable provisions of the DGCL.

Authorized and Outstanding Stock

The Charter authorizes the issuance of 510,000,000 shares, consisting of 500,000,000 shares of common stock, \$0.0001 par value per share, and 10,000,000 shares of undesignated preferred stock, \$0.0001 par value per share. As of June 30, 2026, there were 31,144,754 shares of common stock outstanding and no shares of preferred stock outstanding.

Common Stock

The Charter provides the following with respect to the rights, powers, preferences and privileges of our common stock.

Voting Power

Except as otherwise required by law or as otherwise provided in any certificate of designation for any series of preferred stock, the holders of our common stock possess all voting power for the election of the directors and all other matters requiring stockholder action. Holders of our common stock are entitled to one vote per share on matters to be voted on by stockholders.

Dividends

Holders of our common stock will be entitled to receive such dividends, if any, as may be declared from time to time by our board of directors in its discretion out of funds legally available therefor. We have not historically paid any cash dividends on our common stock to date and do not intend to pay cash dividends in the foreseeable future. Any payment of cash dividends in the future will be dependent upon our revenues and earnings, if any, capital requirements and general financial conditions. In no event will any stock dividends or stock splits or combinations of stock be declared or made on our common stock unless our common stock at the time outstanding are treated equally and identically.

Liquidation, Dissolution and Winding Up

In the event of our voluntary or involuntary liquidation, dissolution or winding-up, our net assets will be distributed pro rata to the holders of our common stock, subject to the rights of the holders of the preferred stock, if any.

Preemptive or Other Rights

There are no sinking fund provisions applicable to our common stock.

Transfer Rights

Subject to applicable law and the transfer restrictions set forth in Article IV of the Bylaws, shares of our common stock and the rights and obligations associated therewith are fully transferable to any transferee.

Preferred Stock

Undesignated Preferred Stock

The Charter provides that shares of preferred stock may be issued from time to time in one or more series. Our board of directors is authorized to fix designations, powers, including voting powers, full or limited, or no voting powers, preferences and the relative, participating, optional or other special rights of the shares of each series of preferred stock and any qualifications, limitations and restrictions thereof. Our board of directors is also able to, without stockholder approval, issue preferred stock with voting and other rights that could adversely affect the voting power and other rights of the holders of our common stock and could have anti-takeover effects. The ability of our board of directors to issue preferred stock without stockholder approval could have the effect of delaying, deferring or preventing a change of control of Senti or the removal of existing management.

Registration Rights

2022 Registration Rights Agreement

We (as successor to Senti Biosciences, Inc.) and certain of our stockholders are party to the Investor Rights and Lock-up Agreement, pursuant to which, among other things, such stockholders were granted certain registration rights with respect to certain shares of securities held by them.

The holders of the Founder Shares (as defined in the Investor Rights and Lock-up Agreement), the holders of the Private Placement Shares (as defined in the Business Combination Agreement) and the Anchor Investors (as defined in the Business Combination Agreement) are entitled to registration rights pursuant to the registration and stockholder rights agreement requiring us to register such securities for resale. The holders of these securities are entitled to make up to three demands, excluding short form demands, that we register such securities. In addition, the holders have certain “piggy-back” registration rights with respect to registration statements filed subsequent to the completion of an initial business combination and rights to require us to register for resale such securities pursuant to Rule 415 under the Securities Act. The registration rights agreement does not contain liquidated damages or other cash settlement provisions resulting from delays in registering our securities. We will bear the expenses incurred in connection with the filing of any such registration statements. Under the Investor Rights and Lock-up Agreement, the Anchor Investors will be entitled to registration rights in respect of these shares. In addition, the PIPE Investors (as defined in the Business Combination Agreement) are entitled to registration rights pursuant to the subscription agreements they entered into with us in connection with the PIPE Investment (as defined in the Business Combination Agreement).

These registration rights are only applicable so long as we do not already have a resale registration statement in effective for these shares. As of the date of this prospectus, we currently have in effect a resale registration statement for the shares included in the Investor Rights and Lock-up Agreement.

Registration Rights Agreement (PIPE Transaction)

We (as successor to Senti Biosciences, Inc.) and the investors, who participated in the private placement transaction in December 2024 (the “PIPE Transaction”), are party to a registration rights agreement, pursuant to which, among other things, we agreed to file, as promptly as reasonably practicable following the closing of the PIPE Transaction, but, in any event, not later than one hundred twenty (120) days thereafter (the “PIPE Filing Date”), a resale registration statement on Form S-3 (or Form S-1 if Form S-3 is not available) providing for the resale by the Selling Securityholders of (i) the shares of common stock issuable upon conversion of the Series A

Preferred Stock and (ii) the shares of common stock issuable upon the exercise of the Warrants, wherein (i) and (ii) collectively are referred to as the Registrable Shares, and to use commercially reasonable efforts to cause such resale registration statement to be declared effective as soon as practicable but in any event no later than the earlier of (a) the seventy-fifth (75th) calendar day following the PIPE Filing Date of the registration statement if the SEC notifies us that it will “review” the registration statement and (b) the fifth (5th) business day after the date we are notified (orally or in writing, whichever is earlier) by the SEC that the registration statement will not be “reviewed” or will not be subject to further review. We also agreed to take all steps necessary to keep such registration statement effective at all times until all Registrable Shares have been resold, or there remains no Registrable Shares. We have agreed to pay a liquidated damages penalty upon certain failures to meet the deadlines set forth above or to keep the resale registration statement continuously effective, which penalties will not exceed 5% of the aggregate subscription amount.

Registration Rights Agreement (Notes Offering)

In connection with the sale of the Initial Notes on May 20, 2026, we entered into the Registration Rights Agreement with the Lead Investor, pursuant to which, among other things, we agreed to file, as promptly as reasonably practicable following any issuance of the Notes, but, in any event, not later than thirty days thereafter (the “Filing Deadline”), a resale registration statement on Form S-3 (or another appropriate form if Form S-3 is not available) providing for the resale by the Lead Investor of the shares of common stock issuable upon exchange of the Notes, and to use reasonable best efforts to cause any such resale registration statement to be declared effective as soon as practicable but in any event no later than the earlier of (a) the seventy-fifth calendar day following the earlier of the filing date and the Filing Deadline of such registration statement if the SEC notifies us that it will “review” the registration statement and (b) the fifth business day after the date we are notified (orally or in writing, whichever is earlier) by the SEC that such registration statement will not be “reviewed” or will not be subject to further review. We further agreed to use reasonable best efforts to keep any such registration statement effective at all times until the earlier of (i) the date on which the Lead Investor shall have resold all the Registrable Securities covered thereby pursuant to Rule 144 or pursuant to such registration statement, (ii) the date on which the Registrable Securities may be resold by the Lead Investor without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for us to be in compliance with the current public information requirement under Rule 144 under the Securities Act or any other rule of similar effect, and (iii) the date on which the Notes are redeemed, repaid or otherwise repurchased. NSG joined this registration rights agreement when the sale of Notes to NSG was closed.

Equity Commitment Letter

The Company also expects to enter into a registration rights agreement in connection with the consummation of the equity investment pursuant to the terms of the Equity Commitment Letter.

Anti-Takeover Provisions

Charter and Bylaws

Among other things, the Charter and Bylaws (as amended from time to time):

- permit our board of directors to issue up to 10,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change of control;
- provide that our number of directors may be changed only by resolution of our board of directors;
- provide that, subject to the rights of any series of preferred stock to elect directors, directors may be removed only with cause by the holders of at least 75% of all of our then-outstanding shares of the capital stock entitled to vote generally at an election of directors;
- provide that all vacancies, subject to the rights of any series of preferred stock, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;

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- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide advance notice in writing, and also specify requirements as to the form and content of a stockholder's notice;
- provide that special meetings of our stockholders may be called by our board of directors pursuant to a resolution adopted by a majority of the board;
- provide that our board of directors will be divided into three classes of directors, with the directors serving three year terms, therefore making it more difficult for stockholders to change the composition of our board of directors; and
- not provide for cumulative voting rights, therefore allowing the holders of a majority of our common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose.

To the fullest extent permitted by the DGCL, our Charter and Bylaws, provide that our board of directors and Officers (as defined in the DGCL) shall not be personally liable to us or our stockholders for monetary damages for breach of their fiduciary duty except for liability (a) for any breach of the director or officer's duty of loyalty to us or our stockholders, (b) for the director or officer's acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (c) for any transaction from which the director or officer derived an improper personal benefit, (d) in the case of directors, under Section 174 of the DGCL or (e) in the case of officers, arising from any claim brought by or in the right of the Company.

Our Bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our Bylaws specify the requirements as to form and content of all stockholders' notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting.

The combination of these provisions make it more difficult for the existing stockholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Because our board of directors will have the power to retain and discharge its officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management. In addition, the authorization of undesignated preferred stock will make it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change our control.

These provisions are intended to enhance the likelihood of continued stability in the composition of our board of directors and its policies and to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to reduce our vulnerability to hostile takeovers and to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and may have the effect of delaying changes in our control or management. As a consequence, these provisions may also inhibit fluctuations in the market price of our stock.

Certain Anti-Takeover Provisions of Delaware Law

We are subject to the provisions of Section 203 of the DGCL. This statute prevents certain Delaware corporations, under certain circumstances, from engaging in a "business combination" with:

- a stockholder who owns 15% or more of our outstanding voting stock, otherwise known as an "interested stockholder";

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- an affiliate of an interested stockholder; or
- an associate of an interested stockholder, for three years following the date that the stockholder became an interested stockholder.

A “business combination” includes a merger or sale of more than 10% of a corporation’s assets. However, the above provisions of Section 203 would not apply if:

- the relevant board of directors approves the transaction that made the stockholder an “interested stockholder,” prior to the date of the transaction;
- after the completion of the transaction that resulted in the stockholder becoming an interested stockholder, that stockholder owned at least 85% of the corporation’s voting stock outstanding at the time the transaction commenced, other than statutorily excluded shares of common stock; or
- on or subsequent to the date of the transaction, the initial business combination is approved by the board of directors and authorized at a meeting of the corporation’s stockholders, and not by written consent, by an affirmative vote of at least two-thirds of the outstanding voting stock not owned by the interested stockholder.

These provisions may have the effect of delaying, deferring, or preventing changes in control.

Choice of Forum

Pursuant to our Bylaws, 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: (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, officers or employees to us or our stockholders; (iii) any action asserting a claim arising pursuant to any provision of the DGCL, our Charter or our Bylaws (including their interpretation, validity or enforceability); or (iv) any action asserting a claim governed by the internal affairs doctrine. This exclusive forum provision will not apply to any causes of action arising under the Securities Act or the Exchange Act, or any other claim for which the federal courts have exclusive jurisdiction. Stockholders cannot waive compliance with the Securities Act, the Exchange Act or any other federal securities laws or the rules and regulations thereunder. Unless we consent in writing to the selection of an alternate forum, the United States federal district courts shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. In addition, our Bylaws provide that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock is deemed to have notice of and consented to these exclusive forum provisions.

The forum selection provisions in our Bylaws may limit our stockholders’ ability to litigate disputes with us in a judicial forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage the filing of lawsuits against us and our directors, officers and employees, even though an action, if successful, might benefit our stockholders. In addition, these forum selection provisions may impose additional litigation costs for stockholders who determine to pursue any such lawsuits against us.

Transfer Agent

Continental Stock Transfer & Trust Company is the transfer agent for our common stock.

Trading Symbol and Market

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

PLAN OF DISTRIBUTION

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

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

- distributions to members, partners, stockholders or other equityholders of the selling stockholders;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales and settlement of short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

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

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

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The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

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

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

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

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

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

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

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

LEGAL MATTERS

Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP has passed upon the validity of the Resale Shares offered by this prospectus and certain other legal matters related to this prospectus.

EXPERTS

The consolidated financial statements of Senti Biosciences, Inc. as of December 31, 2025 and 2024, and for each of the years in the two-year period ended December 31, 2025, have been incorporated by reference herein and in the registration statement in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon authority of said firm as experts in accounting and auditing. The audit report covering the December 31, 2025 consolidated financial statements contains an explanatory paragraph that states that the Company has incurred recurring losses and negative cash flows from operations and has an accumulated deficit that raise substantial doubt about the entity's ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of that uncertainty.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth or incorporated by reference in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference into this prospectus for a copy of such contract, agreement or other document. You may obtain copies of the registration statement and its exhibits via the SEC's EDGAR database.

In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings, including our reports, proxy and information statements and other information, are available to the public on a website maintained by the SEC located at www.sec.gov. We also maintain a website at <https://sentibio.com/>. Through our website, we make available, free of charge, annual, quarterly and current reports, proxy statements and other information as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. The information contained on, or that may be accessed through, our website is not part of, and is not incorporated into, this prospectus. Information contained on our website is not a part of or incorporated by reference into this prospectus and the inclusion of our website and investor relations website addresses in this prospectus is an inactive textual reference only.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

This Registration Statement incorporates by reference important business and financial information about us that is not included in or delivered with this document. The information incorporated by reference is considered to be part of this prospectus, and the SEC allows us to “incorporate by reference” the information we file with it, which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. Any statement contained in this prospectus or a document incorporated or deemed to be incorporated by reference herein or therein shall be deemed to be modified or superseded for the purposes of this prospectus to the extent that a statement contained herein or in any subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes that prior statement. The modifying or superseding statement need not state that it has modified or superseded a prior statement or include any other information set forth in the document that it modifies or supersedes. The making of a modifying or superseding statement shall not be deemed an admission for any purposes that the modified or superseded statement, when made, constituted a misrepresentation, an untrue statement of a material fact or an omission to state a material fact that is required to be stated or that is necessary to make a statement not misleading in light of the circumstances in which it was made. Any statement so modified or superseded shall not be considered in its unmodified or superseded form to constitute a part of this prospectus, except as so modified or superseded.

We hereby incorporate by reference into this prospectus the following documents that we have filed with the SEC under the Exchange Act:

- Annual Report on Form 10-K for the fiscal year ended December 31, 2025, filed with the SEC on [March 27, 2026](#), as amended by Amendment No. 1 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2025, filed with the SEC on [April 29, 2026](#);
- Quarterly Reports on [Form 10-Q](#) for the three months ended March 31, 2026 [and June 30, 2026](#), filed with the SEC on May 14, 2026 and August 14, 2026, respectively;
- Current Reports on Form 8-K filed with the SEC on [March 19, 2026](#), [April 1, 2026](#), [April 24, 2026](#), [May 1, 2026](#), [May 14, 2026](#), [May 26, 2026](#), [July 15, 2026](#), [August 20, 2026](#), [September 2, 2026](#) and [September 4, 2026](#) (excluding, with respect to all such Current Reports on Form 8-K, any information furnished pursuant to Items 2.02 or 7.01, or corresponding information furnished under Item 9.01 or included as an exhibit); and
- The description of our securities contained in Exhibit 4.2 of our Current Report on [Form 8-K](#) filed with the SEC on April 24, 2026.

All documents that we file pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act (other than any such documents or portions thereof that are deemed to have been furnished and not filed in accordance with the rules of the SEC), after the date hereof and prior to the termination of an offering of securities under this prospectus shall be deemed to be incorporated by reference into this prospectus and will automatically update and supersede the information in this prospectus, the applicable prospectus supplement and any previously filed documents.

We will furnish without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. Any such request may be made by writing or calling us at the following address or phone number:

Senti Biosciences Holdings, Inc.
2 Corporate Drive, First Floor
South San Francisco, CA 94080
Telephone: (650) 239-2030
Attention: Investor Relations

25,555,024 Shares of Common Stock



PROSPECTUS

September 24, 2026

You should rely only on the information contained in this prospectus or any supplement or amendment hereto. We have not authorized anyone to provide you with different information. You should not assume that the information contained in this prospectus or any supplement or amendment hereto is accurate as of any date other than the date of this prospectus or any such supplement or amendment. 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.
