

As filed with the Securities and Exchange Commission on August 8, 2024

Registration Statement No. 333-

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM S-3

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

REPLIMUNE GROUP, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

82-2082553
(I.R.S. Employer
Identification Number)

**500 Unicorn Park Drive
3rd Floor
Woburn MA 01801
(781) 222-9600**

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

**Sushil Patel
Chief Executive Officer
Replimune Group, Inc.
500 Unicorn Park Drive
3rd Floor
Woburn MA 01801
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(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

**With copies to:
Timothy J. Corbett
Benjamin J. Stein
Morgan, Lewis & Bockius LLP
One Federal Street
Boston, MA 02110
(617) 341-7700**

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of Securities Act.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to such Section 8(a), may determine.

SUBJECT TO COMPLETION, DATED AUGUST 8, 2024

PROSPECTUS

**REPLIMUNE GROUP, INC.****11,338,515 Shares of Common Stock
Offered by the Selling Stockholders**

This prospectus relates to the resale, from time to time by the selling stockholders named in this prospectus, or the selling stockholders, of up to an aggregate of 11,338,515 shares of our common stock, par value \$0.001 per share, or our Common Stock, which consist of (i) 5,668,937 shares of Common Stock held by the selling stockholders, or the Initial Shares, and (ii) 5,669,578 shares of Common Stock, or the Pre-Funded Warrant Shares, issuable upon the exercise of pre-funded warrants held by certain selling stockholders, or the Pre-Funded Warrants. The Initial Shares and Pre-Funded Warrant Shares are collectively referred to herein as the Shares.

Our registration of the Shares does not mean that the selling stockholders will offer or sell any such Shares. The selling stockholders acquired the Initial Shares and Pre-Funded Warrants, as applicable, pursuant to a private placement transaction, which was consummated on June 14, 2024. We are registering the offer and resale of the Shares to satisfy a covenant set forth in the registration rights agreement entered into on June 14, 2024, pursuant to which we agreed to register the resale of the Shares within a limited period of time following the date of the registration rights agreement.

We will not receive any of the proceeds from any sale of the Shares by the selling stockholders, although we will receive proceeds from the nominal exercise price of any Pre-Funded Warrants, if and to the extent any such Pre-Funded Warrants are so exercised.

Any Pre-Funded Warrant Shares subject to resale hereunder will have been issued by us and received by certain of the selling stockholders prior to any resale of such Pre-Funded Warrant Shares pursuant to this prospectus.

The selling stockholders, or their donees, pledgees, transferees or other successors-in-interest may offer or resell the Shares from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders will bear all commissions and discounts and similar selling expenses, if any, attributable to the sale of the Shares. We will bear all costs, expenses and fees (other than commissions and discounts and similar selling expenses) in connection with the registration of the Shares. For additional information on the methods of sale that may be used by the selling stockholders, see “Plan of Distribution” beginning on page 18 of this prospectus.

Our Common Stock is listed on the Nasdaq Global Select Market under the symbol “REPL.” On August 7, 2024, the last reported sale price of our Common Stock was \$9.20.

We are a “smaller reporting company” under federal securities laws and as such, have elected to comply with reduced public company reporting requirements for this prospectus and the documents incorporated by reference herein and may elect to comply with reduced public company reporting requirements in future filings. See “Summary — Implications of Being a Smaller Reporting Company.”

Investing in our securities involves significant risks. We strongly recommend that you read carefully the risks we describe in this prospectus and in any accompanying prospectus supplement, as well as the risk factors that are incorporated by reference into this prospectus from our filings made with the Securities and Exchange Commission. See “Risk Factors” on page 9 of this prospectus.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is _____, 2024

The information in this prospectus is not complete and may be changed. The selling stockholders named in this prospectus may not sell these securities or accept an offer to buy these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and the selling stockholders named in this prospectus are not soliciting an offer to buy these securities in any state or jurisdiction where such offer or sale is not permitted.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, using a “shelf” registration process. By using a shelf registration statement, the selling stockholders may sell shares of our Common Stock from time to time and in one or more offerings as described in this prospectus and may provide a prospectus supplement to this prospectus that contains specific information about the shares of our Common Stock being offered and sold and the specific terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement or free writing prospectus may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement or free writing prospectus, you should rely on the prospectus supplement or free writing prospectus, as applicable. Before purchasing any shares of our Common Stock, you should carefully read both this prospectus and any applicable prospectus supplement and free writing prospectuses, together with the additional information described under the heading “Where You Can Find More Information.”

Neither we, the selling stockholders nor any underwriter has authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus, any applicable prospectus supplement or any free writing prospectuses prepared by or on behalf of us or to which we have referred you. Neither we, the selling stockholders nor any underwriter takes responsibility for, and can provide no assurances as to the reliability of, any other information that others may give you. Neither we nor the selling stockholders will make an offer to sell the shares of our Common Stock in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and any applicable prospectus supplement to this prospectus is accurate only as of the date on its respective cover, that the information appearing in any applicable free writing prospectus is accurate only as of the date of that free writing prospectus and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless indicated otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates.

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

This prospectus includes 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 are 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 under the heading “Where You Can Find More Information.”

The terms “Replimune,” the “Company,” “our,” “us” and “we,” as used in this prospectus, refer to Replimune Group, Inc., a Delaware corporation, and its subsidiaries unless we state otherwise or the context indicates otherwise.

MARKET DATA

This prospectus and the documents incorporated by reference herein include market and industry data and forecasts concerning our business and the markets for certain cancers, including data regarding the estimated size of those markets and the incidence and prevalence of certain medical conditions, that we have derived from independent consultant reports, publicly available information, various industry, medical and general publications, other published industry sources, government data and our internal data and estimates. Independent consultant reports, industry publications and other published industry sources generally indicate that the information contained therein was obtained from sources believed to be reliable. Our internal data and estimates are based upon information obtained from trade and business organizations and other contacts in the markets in which we operate and our management's understanding of industry conditions.

SUMMARY

This summary highlights selected information from this prospectus and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, any applicable prospectus supplement and any related free writing prospectus, including the risks of investing in our securities discussed under the heading “Risk Factors” contained in this prospectus, any applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our consolidated financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Company Overview

We are a clinical-stage biotechnology company committed to applying our leading expertise in the field of oncolytic immunotherapy to transform the lives of cancer patients. Our proprietary oncolytic immunotherapy product candidates are designed and intended to maximally activate the immune system against cancer.

Oncolytic immunotherapy is an emerging drug class, which we intend to establish as the second cornerstone of immune-based cancer treatments, alongside checkpoint blockade. Oncolytic immunotherapy exploits the ability of certain viruses to selectively replicate in and directly kill tumors, as well as induce a potent, patient-specific, anti-tumor immune response. Our product candidates incorporate multiple mechanisms of action into a practical “off-the-shelf” approach that is intended to maximize the immune response against a patient’s cancer and to offer significant advantages over other approaches to inducing anti-tumor immunity, including personalized vaccine approaches. We believe that the bundling of multiple approaches for the treatment of cancer into single therapies will increase clinical efficacy and simplify the development path of our product candidates, while also improving patient outcomes at a lower cost to the healthcare system than the use of multiple different drugs.

Our proprietary RPx platform is based on a novel, engineered strain of herpes simplex virus 1, or HSV-1, backbone with payloads added to maximize immunogenic cell death and the induction of a systemic anti-tumor immune response. The RPx platform is intended to have unique dual local and systemic activity consisting of direct selective virus-mediated killing of the tumor resulting in the release of tumor-derived antigens and altering of the tumor microenvironment to ignite a strong and durable systemic response. Our product candidates are expected to be synergistic with most established and experimental cancer treatment modalities, and, with an attractive safety profile the RPx platform is expected to have the versatility to be developed alone or combined with a variety of other treatment options. We currently have three RPx product candidates in our development pipeline, RP1 (vusolimogene oderparepvec), our lead product candidate, RP2 and RP3. Although our fiscal year ends March 31st, our programs and program updates are reported on a calendar year basis.

We are conducting a number of clinical trials of RP1, both as a monotherapy and in combination with anti-PD-1 therapy, with a focus on establishing a major skin cancer franchise.

Our leading clinical trial of RP1 is our IGNYTE trial, a multi-cohort Phase 1/2 clinical trial being conducted in collaboration with Bristol Myers Squibb Company, or BMS, under which BMS has granted us a non-exclusive, royalty-free license to, and is supplying at no cost, its anti-PD-1 therapy, nivolumab, for use in combination with RP1. The leading tumor specific cohort in the IGNYTE trial is our registration directed Phase 2 expansion cohort enrolling patients with anti-PD-1 failed cutaneous melanoma who are being treated with RP1 in combination with nivolumab. The anti-PD1 failed melanoma cohort from the IGNYTE clinical trial includes 140 patients who received RP1 plus nivolumab after confirmed progression while being treated with at least 8 weeks of prior anti-PD1 therapy (+/- anti-CTLA-4). The primary analysis by independent central review was triggered once all patients had been followed for at least 12 months. The topline results showed the overall response rate was 33.6% by modified RECIST 1.1 criteria, the primary endpoint as defined in the protocol, and 32.9% by RECIST 1.1 criteria, an additional analysis requested by U.S. Food and Drug Administration, or the FDA. Responses from baseline were highly durable, with all responses lasting more than 6 months and median duration of response, or DOR, exceeding 35 months. RP1 combined with nivolumab continues to be well-tolerated, with mainly Grade 1-2 “on target” side effects,

observed. The Company plans to submit the full primary analysis data from the anti-PD1 failed melanoma cohort including key secondary endpoint data and subgroups for presentation at an upcoming medical congress. Following a Type C meeting with the FDA, a confirmatory study design consisting of a 2-arm randomized trial with physician's choice of treatment as a comparator arm in anti-PD1 failed melanoma patients was agreed. The FDA requested that the Phase 3 confirmatory trial be underway at the time of a BLA submission under the accelerated approval pathway. In May 2024, we reported completing a successful Type C meeting with the FDA that confirmed alignment on our Chemistry, Manufacturing and Controls plans to support IGNYTE anti-PD1 failed melanoma BLA submission. A pre-BLA meeting with the FDA is planned for September 2024 and a BLA submission for RP1 in combination with nivolumab in anti-PD1 failed melanoma is planned for the second half of 2024.

In our non-melanoma skin cancer, or NMSC, cohort of the IGNYTE clinical trial, we provided a data update in December 2023 from the first 30 patients with at least 6 months of follow up including patients with cutaneous squamous cell carcinoma, or CSCC, Merkel cell carcinoma, or MCC, basal cell carcinoma, and angiosarcoma in this cohort. The data showed that treatment with RP1 in combination with nivolumab led to an overall response rate, or ORR, of 30% which is consistent with data from the anti-PD1 failed melanoma cohort with approximately one-third of patients responding and 60% demonstrating clinical benefit. The combination of RP1 and nivolumab was well tolerated in this patient population with a safety profile consistent with the overall experience seen with this treatment regimen to date. Enrollment remains open in this cohort.

Furthering development of our RP1 clinical candidate, we have open for enrollment a Phase 1b/2 clinical trial of single agent RP1 in solid organ transplant recipients with skin cancers, including CSCC, which is referred to herein as ARTACUS or the ARTACUS trial, which we believe to be potentially registrational (in its own right or, subject to discussion with regulatory authorities, following enrollment of additional patients, including as a potential label expansion after an initial approval of RP1 in a different indication). We are currently enrolling up to 65 patients in the ARTACUS trial to assess the safety and efficacy of RP1 in liver, kidney, heart, lung, and hematopoietic cell transplant recipients with skin cancers. In November 2023, we presented initial data from the ARTACUS clinical trial of RP1 monotherapy in solid organ transplant recipients with skin cancers at the Society for Immunotherapy of Cancer's 38th Annual Meeting. The data included 23 evaluable patients with CSCC (n=20) and Merkel cell carcinoma (n=3), demonstrating an ORR of 34.5% and a complete response of 21%. RP1 monotherapy was well tolerated in these patients and the safety profile was similar to that observed in our other RP1 clinical trials in patients who are not immune suppressed. No immune-mediated adverse events or evidence of allograft rejection were observed. This data was also presented during oral presentation at the American Association of Cancer Research 2024 Annual Meeting in April 2024. We continue to enroll patients into this trial.

As previously reported, the CERPASS clinical trial of RP1 in patients with CSCC continues as planned to assess DOR, progression free survival and overall survival with greater maturity.

We are also developing or have been developing additional product candidates, RP2 and RP3, that have been further engineered to enhance anti-tumor immune responses and are intended to address additional tumor types, including traditionally less immune responsive tumor types. In addition to the expression of GALV-GP R(-) and human GM-CSF as in RP1, RP2 has been engineered to express an antibody-like molecule intended to block the activity of CTLA-4, a protein that inhibits the full activation of an immune response, including to tumors. RP3 has been engineered with the intent to further stimulate an anti-tumor immune response through activation of immune co-stimulatory pathways through the additional expression of the ligands for CD40 and 4-1BBL, as well as anti-CTLA-4 and GALV-GP R(-), but without the expression of GM-CSF.

We continue the development of our clinical candidate RP2 with a focus on establishing a rare cancer franchise. Notably, as previously reported, from our Phase-1 clinical trial of RP2 alone and in combination with nivolumab, we have seen durable responses from a monotherapy cohort in a variety of difficult to treat tumors as well as in combination with anti-PD1 and in particular in patients with uveal melanoma. In November 2023, we presented updated data from a cohort of metastatic uveal melanoma patients during a Plenary Session at the 20th Annual International Society for Melanoma Research Congress. The updated data showed RP2 led to an ORR of 29.4% (5 of 17 patients; one of the responding patients was treated with RP2 monotherapy and four of the responding patients were treated with RP2 combined with nivolumab),

including responses in patients with liver, lung, and bone metastases. The median DOR at the data cutoff was 11.47 months (range of 2.78 to 21.22 with responses ongoing). Nearly all patients (15 of 17, or 88.2%) in the study had progressed on or after immunotherapy with 12 of 17 patients (70.6%) having previously received both anti-PD1 and anti-CTLA-4 therapies, including four of the responding patients. RP2 was generally well tolerated both as monotherapy and in combination with nivolumab with no additive adverse events observed. The most common grade 1 or 2 treatment related adverse events, or TRAEs, overall in both cohorts were pyrexia, chills, fatigue, hypotension and pruritis. Six patients had grade 3 TRAEs, including two cases of hypotension. There were no grade 4 or 5 TRAEs. In June 2024, we presented that the disease control rate for this cohort of patients was 58.8%. We have finalized the protocol based on FDA input and begun trial initiation activities for a registration-directed study of RP2 in metastatic uveal melanoma in patients who are immune checkpoints inhibitor-naïve. The study is a randomized trial of RP2 in combination with nivolumab vs. ipilimumab and nivolumab, or nivolumab for those ineligible for ipilimumab.

The Company continues its signal finding trial of RP2 in combination with atezolizumab and bevacizumab in the 2L setting of patients with hepatocellular carcinoma (HCC) in collaboration with Roche. This Phase 2 clinical trial is expected to dose its first patient in the second half of 2024.

RP1, RP2 and RP3 are administered by direct injection into solid tumors, guided either visually or by ultrasound, computerized tomography or other imaging methods. We believe that direct injection maximizes virus-mediated tumor cell death, provides the most efficient delivery of virus-encoded immune activating proteins into the tumor with the goal of activating systemic immunity, and limits the systemic toxicities that could be associated with intravenous administration. Activation of systemic immunity through local administration is intended to lead to the induction of anti-tumor immune responses leading to clinical response of tumors that have not themselves been injected.

Private Placement

Securities Purchase Agreement

On June 12, 2024, we entered into a securities purchase agreement, or the Securities Purchase Agreement, with certain institutional and accredited investors, or the Purchasers, pursuant to which we sold and issued to the Purchasers in a private placement (i) an aggregate of 5,668,937 Initial Shares, and (ii) Pre-Funded Warrants to purchase up to an aggregate of 5,669,578 of Pre-Funded Warrant Shares. The Pre-Funded Warrants are immediately exercisable upon issuance at an exercise price of \$0.001 per share and do not expire. The transactions contemplated by the Securities Purchase Agreement, or the Private Placement, closed on June 14, 2024. We received gross proceeds from the Private Placement of approximately \$100 million, before deducting fees payable to the placement agents and other offering expenses payable by us.

Registration Rights Agreement.

On June 14, 2024, in connection with the closing of the Private Placement and pursuant to the Securities Purchase Agreement, we entered into a registration rights agreement, or the Registration Rights Agreement, pursuant to which the Purchasers have certain registration rights in respect of the securities acquired pursuant to the Securities Purchase Agreement, subject to customary conditions. Under the Registration Rights Agreement, we have agreed to use reasonable best efforts to cause the registration statement to which this prospectus forms a part to become effective as soon as practicable, but in any event no later than the earlier of (i) the 100th calendar day following the initial filing date of such registration statement if the SEC notifies us that it will “review” such registration statement, and (ii) the earlier of (a) the 30th calendar day following the initial filing date of such registration statement, and (b) the fifth business day after the date we are notified by the SEC that such registration statement will not be “reviewed” or will not be subject to further review. We have also agreed to use commercially reasonable efforts to keep the registration statement effective until the earlier of (x) the date on which the Purchasers have resold all of the securities registered for resale, and (ii) the date the securities registered thereby cease to be “Registrable Securities” as contemplated in the Registration Rights Agreement. To the extent we fail to satisfy certain conditions, we have agreed to pay certain liquidated damages to the Purchasers. Additionally, we and the Purchasers have agreed to grant customary indemnification rights.

Implications of Being a Smaller Reporting Company

We are a “smaller reporting company,” as defined in Regulation S-K. As a result, we may take advantage of certain of the scaled disclosures available to smaller reporting companies. Specifically, as a smaller reporting company, we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and have reduced disclosure obligations regarding executive compensation. We will remain a smaller reporting company if we have (i) less than \$250 million in market value of our shares held by non-affiliates as of the last business day of our second fiscal quarter or (ii) less than \$100 million of annual revenues in our most recent fiscal year completed before the last business day of our second fiscal quarter and less than \$700 million in market value of our shares held by non-affiliates as of the last business day of our second fiscal quarter.

Corporate Information

We are a Delaware corporation organized in July 2017. Our principal executive offices are located at 500 Unicorn Park Drive, Suite 303, Woburn, MA 01801, and our telephone number is (781) 222-9600. Our website is www.replimune.com. The information contained on or accessible through our website is not incorporated by reference into this prospectus, and you should not consider any information contained on, or that can be accessed through, our website as part of this prospectus or in deciding whether to purchase our Common Stock.

	The Offering
Common Stock offered by us:	None.
Common stock offered by the selling stockholders	Up to 11,338,515 shares of our Common Stock, which consist of (i) 5,668,937 shares of our Common Stock held by the selling stockholders, and (ii) 5,669,578 shares of our Common Stock issuable upon the exercise of the Pre-Funded Warrants by certain of the selling stockholders.
Common Stock to be outstanding after this offering:	68,309,968.
The Pre-Funded Warrants	The Pre-Funded Warrants are immediately exercisable into shares of our Common Stock at an exercise price of \$0.001 per share.
Selling stockholders	All of the shares of our Common Stock are being offered by the selling stockholders. See “Selling Stockholders” on beginning on page 14 for additional information on the selling stockholders.
Use of proceeds:	We will not receive any proceeds from the sale of the shares of Common Stock in this offering by the selling stockholders, although we will receive proceeds from the nominal exercise price of any Pre-Funded Warrants. See “Use of Proceeds” beginning on page 13 for additional information on the use of proceeds.
Plan of Distribution	The selling stockholders, or their pledgees, donees, transferees, distributees, beneficiaries or other successors-in-interest, may offer or sell the shares of our Common Stock offered under this prospectus from time to time through public or private transactions at our prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders may also resell the shares of our Common Stock offered under this prospectus to or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions. See “Plan of Distribution” beginning on page 18 for additional information on the methods of sale that may be used by the selling stockholders.
Risk factors:	Investing in our Common Stock involves significant risks. See “Risk Factors” beginning on page 9 of this prospectus and the other information included in, or incorporated by reference into, this prospectus for a discussion of certain factors you should carefully consider before deciding to invest in shares of our Common Stock.
Nasdaq Global Select Market symbol:	“REPL”
	<p>The number of shares of Common Stock to be outstanding after this offering, as set forth above, is based on 68,309,968 shares of our Common Stock outstanding as of June 30, 2024, which amount excludes:</p> <ul style="list-style-type: none"> • 10,157,054 shares of our Common Stock issuable upon the exercise of stock options outstanding as of June 30, 2024 at a weighted average exercise price of \$15.37 per share;

- 3,370,183 shares of our Common Stock underlying unvested restricted stock units and performance stock units outstanding as of June 30, 2024 at a weighted average grant date fair value of \$12.77 per share;
- 497,344 shares of our Common Stock issuable upon the exercise of warrants outstanding as of June 30, 2024, at an exercise price of \$1.01 per share;
- 10,211,969 shares of our Common Stock issuable upon the exercise of existing pre-funded warrants outstanding as of June 30, 2024, at an exercise price of \$0.0001 per share;
- 1,988,217 shares of our Common Stock reserved, as of June 30, 2024, for future issuance under our 2018 Omnibus Incentive Compensation Plan; and
- 3,056,563 shares of our Common Stock reserved, as of June 30, 2024, for future issuance under our Employee Stock Purchase Plan.

RISK FACTORS

An investment in our Common Stock involves a high degree of risk. Before deciding whether to invest in our Common Stock, you should carefully consider the risks described below and discussed under the sections captioned “Risk Factors” contained in our most recent Annual Report on Form 10-K, as well as in any of our subsequent Quarterly Reports on Form 10-Q, which are incorporated by reference herein in their entirety, together with other information in this prospectus, the information and documents incorporated by reference in this prospectus, and in any prospectus supplement or free writing prospectus that we have authorized for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our Common Stock to decline, resulting in a loss of all or part of your investment.

The sale of a substantial number of shares of our Common Stock in the public market, including resale of the Securities issued or issuable to the selling stockholders, could adversely affect the prevailing market price for our Common Stock.

We are registering for resale up to 11,338,515 shares of our Common Stock consisting of Initial Shares and Pre-Funded Warrant Shares underlying the Pre-Funded Warrants issued to the selling stockholders pursuant to the Securities Purchase Agreement to fulfill our contractual obligations under the Registration Rights Agreement. Sales of substantial amounts of shares of our Common Stock in the public market, or the perception that such sales might occur, could adversely affect the market price of our Common Stock. We cannot predict if and when the selling stockholders may sell such shares in the public markets. Furthermore, in the future, we may issue additional shares of our Common Stock or other equity or debt securities exercisable for, or convertible into, shares of our Common Stock. Any such issuances could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

The price of our Common Stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our Common Stock.

Our stock price has been and is likely to be volatile. The stock market in general and the market for biopharmaceutical companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, a purchaser of our Common Stock may not be able to sell shares of our Common Stock at or above the price at which it was acquired. The market price for our Common Stock may be influenced by many factors, including:

- the success of competitive products or technologies;
- results of clinical trials of RP1 and our other product candidates or those of our competitors;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to the development of RP1 and our other product candidates or clinical development programs;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates or drugs;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;

- political and economic instability, the possibility of an economic recession, international hostilities, acts of terrorism and governmental restrictions, inflation, trade relationships and military and political alliances; and
- general economic, industry and market conditions.

FORWARD-LOOKING STATEMENTS

This prospectus contains and incorporates by reference “forward-looking statements” within the meaning of the federal securities laws. All statements other than statements of historical fact contained or incorporated by reference in this prospectus, including statements regarding our future results of operations and financial position, business strategy and plans and objectives of management for future operations, are “forward-looking statements” for the purposes of this prospectus. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify these forward-looking statements by the use of words such as “outlook,” “believes,” “expects,” “potential,” “continues,” “may,” “will,” “should,” “seeks,” “approximately,” “predicts,” “intends,” “plans,” “estimates,” “anticipates” or the negative version of these words or other comparable words. Such forward-looking statements are subject to various risks and uncertainties. Accordingly, there are or will be important factors that could cause actual outcomes or results to differ materially from those indicated in these statements. We believe these factors include, among other things:

- the timing, progress, and results of preclinical studies and clinical trials for our product candidates, including the timing of initiation and completion of studies or trials and related preparatory work and the period during which the results of the trials will become available;
- our ability to obtain additional funding as necessary;
- the timing, scope or likelihood of regulatory filings and approvals, including timing of our BLA, and filing for, and final approval by the FDA, of, RP1 or any of our other product candidates;
- the timing, scope, or likelihood of foreign regulatory filings and approvals;
- our ability to develop our product candidates for use in combination with other checkpoint blockade therapies, including anti-PD-1;
- our ability to develop and advance any future product candidates into, and successfully complete, clinical trials;
- our expectations regarding the size of the patient populations for RP1, RP2 and/or RP3 or any other product candidates from our RPx platform if approved for commercial use;
- our ability to successfully qualify, obtain approval for, and maintain successful operation, approval and qualification of our in-house manufacturing operations;
- our ability to obtain and maintain sufficient quantities of raw material supplies or access single or limited sources of goods or services needed to build or maintain our product candidate supplies or otherwise operate our in-house manufacturing facility;
- the costs of operating our in-house manufacturing facility;
- our estimates regarding expenses and capital requirements;
- the implementation of our business model and our strategic plans for our business, RP1 and our other product candidates;
- the rate and degree of market acceptance and clinical utility of RP1 and our other product candidates;
- the potential benefits of and our ability to establish or maintain future collaborations or strategic relationships;
- our ability to retain the continued service of our key professionals and to identify, hire and retain additional qualified professionals;
- our intellectual property position, including the scope of protection we are able to establish and maintain for intellectual property rights covering RP1 and our other product candidates, claims others may make regarding rights in our intellectual property, and any potential infringement, misappropriation or other violation of any third-party intellectual property rights;

- our competitive position, and developments and projections relating to our competitors and our industry;
- negative developments in the fields of immuno-oncology or oncolytic immunotherapy; and
- the impact of laws and regulations.

In addition, statements such as “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus and, although we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted a thorough inquiry into, or review of, all potentially available relevant information. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. Factors that may cause actual results to differ materially from current expectations include, among other things, those set forth in Part I, Item 1A of our [Annual Report on Form 10-K for the year ended March 31, 2024](#), Part II, Item 1A — “Risk Factors” and any risks contained in any other documents incorporated by reference herein. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events or otherwise.

USE OF PROCEEDS

We will not receive any proceeds from the sale of our Common Stock by the selling stockholders.

We may receive proceeds from the nominal exercise price of the Pre-Funded Warrants which, if exercised in full, would result in gross proceeds to us of approximately \$5,669. There can be no assurance that any of the Pre-Funded Warrants will be exercised.

We intend to use the net proceeds from any exercise of the Pre-Funded Warrants for working capital and general corporate purposes.

SELLING STOCKHOLDERS

The shares of our Common Stock being offered by the selling stockholders, consisting of Initial Shares and Pre-Funded Warrant Shares underlying the Pre-Funded Warrants, in each case issued to the selling stockholders pursuant to the Securities Purchase Agreement, are being registered hereby to fulfill our contractual obligations under the Registration Rights Agreement. See “Prospectus Summary — Private Placement.”

The following table sets forth the number and percentage of shares of our Common Stock beneficially owned by the selling stockholders as of July 31, 2024, taking into account the number of shares that may be offered under this prospectus and the number and percentage of shares of our Common Stock beneficially owned by the selling stockholders assuming all of the shares offered under this prospectus are sold. Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to shares of our Common Stock. Generally, a person “beneficially owns” shares of our Common Stock if the person has or shares with others the right to vote those shares or to dispose of them, or if the person has the right to acquire voting or disposition rights within 60 days.

All information contained in the table below and the footnotes thereto is based upon information provided to us by the selling stockholders. The information in the table below and the footnotes thereto regarding shares of our Common Stock to be beneficially owned after the offering under this prospectus assumes the sale of all shares of our Common Stock being offered by the selling stockholders under this prospectus. The percentage of shares of our Common Stock owned is based on 68,321,396 shares of our Common Stock issued and outstanding as of July 31, 2024. Unless otherwise indicated in the footnotes to this table, we believe that the selling stockholders have sole voting and investment power with respect to the shares of our Common Stock indicated as beneficially owned.

As used in this prospectus, the term “selling stockholder” includes the selling stockholders named below and any donees, pledgees, transferees or other successors-in-interest selling shares of our Common Stock received after the date of this prospectus from the selling stockholders as a gift, pledge, or other non-sale related transfer.

Name of Selling Stockholder	Shares of Common Stock Beneficially Owned Prior to the Offering		Shares of Common Stock Being Offered ⁽¹⁾	Shares of Common Stock Beneficially Owned After the Offering ⁽²⁾	
	Number	Percentage	Number	Number	Percentage (%)
Entities affiliated with Baker Bros. Advisors LP ⁽³⁾	20,257,305	25.8%	5,669,578	14,587,727	18.6%
Entities advised or subadvised by T. Rowe Price Associates, Inc. ⁽⁴⁾	8,435,219	12.3%	1,417,234	7,017,985	10.3%
Entities affiliated with Redmile Group, LLC ⁽⁵⁾	4,946,060	7.2%	1,417,234	3,528,826	5.2%
Boxer Capital, LLC ⁽⁶⁾	1,536,341	2.2%	850,341	686,000	1.0%
Entities affiliated with RTW Investments, LP ⁽⁷⁾	1,133,787	1.7%	1,133,787	—	*
Entities affiliated with EcoR1 Capital, LLC ⁽⁸⁾	850,341	1.2%	850,341	—	*

* Indicates beneficial ownership of less than one percent (1%) of the total outstanding shares of our Common Stock.

(1) The number of shares of our Common Stock in the column “Shares of Common Stock Being Offered” represents all of the shares of our Common Stock that a selling stockholder may offer and sell from time to time under this prospectus, including, for the avoidance of doubt, all shares of Common Stock issuable upon exercise of the Pre-Funded Warrants, as applicable.

- (2) We do not know when or in what amounts a selling stockholder may offer shares of our Common Stock for sale. The selling stockholders might not sell any or might sell all of the shares of our Common Stock offered by this prospectus. Because the selling stockholders may offer all or some of the shares of our Common Stock pursuant to this offering, and because, except as set forth elsewhere in this prospectus, there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares of our Common Stock, we cannot estimate the number of the shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, we have assumed that all of the Pre-Funded Warrants will be exercised and, after completion of the offering, none of the shares of our Common Stock covered by this prospectus will be held by the selling stockholders.
- (3) Consists of (i) 9,200,795 shares of our Common Stock held by Baker Brothers Life Sciences, L.P. (“Baker Brothers Life Sciences”), none of which were purchased in the Private Placement, (ii) 844,541 shares of our Common Stock held by 667, L.P. (“667” and, together with Baker Brothers Life Sciences, the “Baker Funds”), none of which were purchased in the Private Placement, (iii) 4,102,636 shares of our Common Stock issuable upon the exercise of pre-funded warrants held by Baker Brothers Life Sciences (the “Baker Warrants”), none of which were purchased in the Private Placement (iv) 439,755 shares of our Common Stock issuable upon the exercise of pre-funded warrants held by 667 (the “667 Warrants” and, together with the Baker Warrants, the “Existing Warrants”), none of which were purchased in the Private Placement, (v) 5,199,583 shares of our Common Stock issuable upon the exercise of the Pre-Funded Warrants that were purchased by Baker Brothers Life Sciences in the Private Placement, and (vi) 469,995 shares of our Common Stock issuable upon the exercise of the Pre-Funded Warrants that were purchased by 667 in the Private Placement. Pursuant to the terms and provisions of the Existing Warrants and the Pre-Funded Warrants, the Baker Funds may not exercise the Existing Warrants or the Pre-Funded Warrants to the extent such exercise would cause such Baker Fund, together with its affiliates and attribution parties, to beneficially own a number of shares of our Common Stock which would exceed 9.99% of the number of shares of our Common Stock outstanding following such exercise (for purposes of the denominator, immediately after giving effect to the issuance of shares of Common Stock to be issued upon the applicable exercise of such Existing Warrants or Pre-Funded Warrants) (the “Beneficial Ownership Limitation”). Upon 61 days’ advance written notice to us, the applicable holder of an Existing Warrant or Pre-Funded Warrant may from time to time increase or decrease the Beneficial Ownership Limitation percentage applicable to such Existing Warrant or Pre-Funded Warrant. On December 13, 2022, pursuant to a written notice delivered to us, Baker Bros. Advisors LP adjusted the maximum percentage of the Beneficial Ownership Limitation for the Existing Warrants to 4.99% from its then current level of 9.99%. Although none of the Existing Warrants or Pre-Funded Warrants are currently exercisable by the Baker Funds as a result of the Beneficial Ownership Limitation, the Beneficial Ownership Limitation has been disregarded for purposes of the information set forth in the table above. In addition, the percentage in the column “Shares of Common Stock Beneficially Owned After the Offering” assumes that the Pre-Funded Warrants have been fully exercised and the underlying shares of our Common Stock issuable upon exercise of the Pre-Funded Warrants have been issued and are outstanding. Baker Bros. Advisors LP (“BBA”) is the management company and investment advisor to the Baker Funds and has sole voting and investment power with respect to these securities. Baker Bros. Advisors (GP) LLC (the “GP”) is the sole general partner of BBA. Julian C. Baker and Felix J. Baker are managing members of the GP. The GP, Julian C. Baker, Felix J. Baker and BBA may be deemed to be beneficial owners of the securities directly held by the Baker Funds. Julian C. Baker, Felix J. Baker, BBA, and the GP disclaim beneficial ownership of all securities held by the Baker Funds, except to the extent of their indirect pecuniary interest therein. The business address of BBA, GP, Julian C. Baker and Felix J. Baker is 860 Washington Street, 3rd Floor, New York, NY 10014.
- (4) Consists of (i) 1,692,460 shares of our Common Stock held by T. Rowe Price Health Sciences Fund, Inc., 165,120 of which were purchased in the Private Placement, (ii) 138,996 shares of our Common Stock held by to TD Mutual Funds — TD Health Sciences Fund, 14,026 of which were purchased in the Private Placement, (iii) 76,387 shares of our Common Stock held by T. Rowe Price Health Sciences Portfolio, 7,931 of which were purchased in the Private Placement, (iv) 4,409,173 shares of our Common Stock held by T. Rowe Price New Horizons Fund, Inc., 723,217 of which were purchased in the Private Placement, (v) 175,810 shares of our Common Stock held by New York City Deferred

Compensation Plan, 27,692 of which were purchased in the Private Placement, (vi) 913,395 shares of our Common Stock held by T. Rowe Price New Horizons Trust, 147,264 of which were purchased in the Private Placement, (vii) 19,737 shares of our Common Stock held by T. Rowe Price U.S. Equities Trust, 6,520 of which were purchased in the Private Placement, (viii) 22 shares of our Common Stock held by T. Rowe Price Multi-Strategy Total Return Fund, Inc., all of which were purchased in the Private Placement, (ix) 89,651 shares of our Common Stock held by T. Rowe Price Integrated U.S. Small-Mid Cap Core Equity Fund, 12,403 of which were purchased in the Private Placement, (x) 796,608 shares of our Common Stock held by T. Rowe Price Integrated U.S. Small-Cap Growth Equity Fund, 270,487 of which were purchased in the Private Placement, (xi) 112,915 shares of our Common Stock held by Brighthouse Funds Trust II — T. Rowe Price Small Cap Growth Portfolio, 39,106 of which were purchased in the Private Placement, and (xii) 10,065 shares of our Common Stock held by KeyCorp 401(k) Savings Plan, 3,446 of which were purchased in the Private Placement. The foregoing funds and accounts are advised or subadvised by T. Rowe Price Associates, Inc. (“TRPA”). TRPA, as investment adviser, has dispositive and voting power with respect to the shares held by these funds and accounts. TRPA may be deemed to be the beneficial owner of such shares of our Common Stock, however, TRPA expressly disclaims that it is, in fact, the beneficial owner of such shares. TRPA is a wholly owned subsidiary of T. Rowe Price Group, Inc., which is a publicly traded financial services holding company. The business address of each of the affiliates of T. Rowe Price is c/o T. Rowe Price Associates, Inc., 100 East Pratt Street, Baltimore, MD 21202.

- (5) Consists of (i) 3,528,826 shares of our Common Stock held by certain private investment vehicles and sub-advised accounts managed by Redmile Group, LLC (“Redmile”), including Redmile Strategic Trading Sub, Ltd. (“Strategic Trading Sub”), Redmile Strategic Long Only Trading Sub, Ltd. (“Long Only Trading Sub”) and RedCo II Master Fund, L.P. (“Master Fund” and, together with Strategic Trading Sub and Long Only Trading Sub, the “Redmile Funds”), none of which were purchased in the Private Placement, (ii) 135,318 shares of our Common Stock purchased by Strategic Trading Sub in the Private Placement, (iii) 337,094 shares of our Common Stock purchased by Long Only Trading Sub in the Private Placement, and (iv) 944,822 shares of our Common Stock purchased by Master Fund in the Private Placement. Redmile is the investment manager/adviser to the Redmile Funds and, in such capacity, exercises voting and investment power over all of the shares of our Common Stock held by the Redmile Funds and may be deemed to be the beneficial owner of these shares of our Common Stock. Jeremy C. Green serves as the managing member of Redmile and also may be deemed to be the beneficial owner of these shares of our Common Stock. Redmile and Mr. Green each disclaim beneficial ownership of these shares of our Common Stock, except to the extent of its or his pecuniary interest in such shares, if any. The address of the Redmile Funds is c/o Redmile Group, LLC, One Letterman Drive, Suite D3-300, San Francisco, CA 94129.
- (6) Consists of 1,536,341 shares of our Common Stock held by Boxer Capital, LLC (“Boxer Capital”), 850,341 of which were purchased in the Private Placement. Boxer Asset Management Inc. is the managing member of Boxer Capital. Joseph C. Lewis is the sole indirect owner of Boxer Asset Management Inc. Boxer Capital, Boxer Asset Management Inc. and Joseph C. Lewis have shared powers to vote (or direct the vote) and/or to dispose (or direct the disposition) of such shares of our Common Stock. Boxer Asset Management Inc. and Joseph C. Lewis disclaim beneficial ownership over the shares of our Common Stock owned by Boxer Capital except to the extent of their pecuniary interest therein. The principal address for Boxer Capital is 12860 El Camino Real, Suite 300, San Diego, CA 92130. The principal address for Boxer Asset Management Inc. and Mr. Lewis is Cay House, EP Taylor Drive N7776, Lyford Cay, New Providence, Bahamas.
- (7) Consists of 1,133,787 shares of our Common Stock in the Private Placement held in the aggregate by RTW Master Fund, Ltd. (“RTW Master”), and RTW Innovation Master Fund, Ltd. (“RTW Innovation” and, together with RTW Master, the “RTW Funds”). RTW, in its capacity as the investment manager of the RTW Funds, has the power to vote and the power to direct the disposition of the shares held by the RTW Funds. Accordingly, RTW may be deemed to be the beneficial owner of such securities. Roderick Wong, M.D., as the Managing Partner of RTW, has the power to direct the vote and disposition of the securities held by RTW. Dr. Wong disclaims beneficial ownership of the shares held by the RTW Funds, except to the extent of his pecuniary interest therein. The address and principal office of RTW Investments, LP is 40 10th Avenue, Floor 7, New York, NY 10014, and the address of Dr. Wong and each of the RTW Funds is c/o RTW Investments, LP, 40 10th Avenue, Floor 7, New York, NY 10014.

- (8) Consists of (i) 48,242 shares of our Common Stock purchased by EcoR1 Capital Fund, L.P. (“Capital Fund”) in the Private Placement, and (ii) 802,099 shares of our Common Stock purchased by EcoR1 Capital Fund Qualified, L.P. (“Qualified Fund” and, together with Capital Fund, the “EcoR1 Capital Funds”) in the Private Placement. EcoR1 Capital, LLC (“EcoR1”) is the general partner of the EcoR1 Capital Funds. Oleg Nodelman is the control person of EcoR1 and may be deemed to share dispositive voting power over the shares held by the EcoR1 Capital Funds. Mr. Nodelman and EcoR1 both disclaim beneficial ownership of all shares except to the extent of their pecuniary interest. The address for the EcoR1 Capital Funds is 357 Tehama Street, Suite 3, San Francisco, CA 94103.

PLAN OF DISTRIBUTION

The selling stockholders, including their pledgees, donees, transferees, distributees, beneficiaries or other successors in interest, may from time to time offer some or all of the shares of our Common Stock offered under this prospectus. We will not receive any of the proceeds from the sale of the shares of our Common Stock offered under this prospectus by the selling stockholders. We will bear all fees and expenses incident to our obligation to register the shares of our Common Stock offered under this prospectus.

The selling stockholders may sell all or a portion of the shares of our Common Stock beneficially owned by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the shares of our Common Stock are sold through underwriters or broker-dealers, the selling stockholders will be responsible for underwriting discounts or commissions or agent's commissions. The shares of our Common Stock may be sold on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale, in the over-the-counter market or in transactions otherwise than on these exchanges or systems or in the over-the-counter market and in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at privately negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions.

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

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell shares of our Common Stock 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 over-the-counter distribution;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales effected after the effective date of the registration statement of which this prospectus forms a part;
- 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; or
- 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 our 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 our 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 stockholder under this prospectus. The selling stockholders also may transfer the shares of our Common Stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of shares 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 shares of our Common Stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our Common Stock and deliver these securities to close out its short positions, or loan or pledge the shares of our 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 of our Common Stock offered under this

prospectus, which shares of our Common Stock such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

Broker-dealers engaged by the selling stockholders may arrange for other broker-dealers to participate in sales. If the selling stockholders effect certain transactions by selling shares of our Common Stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the shares of our Common Stock for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with applicable rules of the Financial Industry Regulatory Authority, Inc., or FINRA; and in the case of a principal transaction a markup or markdown in compliance with applicable FINRA rules.

The aggregate proceeds to the selling stockholders from the sale of the shares of our Common Stock offered under this prospectus will be the purchase price of the shares of Common Stock less discounts or commissions, if any. The selling stockholders reserve the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of shares of our Common Stock to be made directly or through agents. We will not receive any of the proceeds from the offering of Common Stock under this prospectus.

The selling stockholders also may resell all or a portion of the shares of our Common Stock offered under this prospectus in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conforms to the requirements of that rule.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the shares of our Common Stock or interests therein may be deemed to be “underwriters” within the meaning of Section 2(a)(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares of our Common Stock may be underwriting discounts and commissions under the Securities Act. Each selling stockholder has informed us that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities. The selling stockholders are subject to the prospectus delivery requirements of the Securities Act.

To the extent required pursuant to Rule 424(b) under the Securities Act, the shares of our Common Stock to be sold, the name of the selling stockholders, the purchase price and public offering price, the names of any agents, 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.

We have agreed to keep this prospectus effective until the earliest to occur of the following events: (i) the date on which the selling stockholders shall have resold all the Securities covered hereby; and (ii) the date on which the Securities cease to be “Registrable Securities” as such term is defined in the Registration Rights Agreement. In order to comply with the securities laws of some states, if applicable, the shares of our Common Stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the shares of our Common Stock may not be sold unless the shares been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

The selling stockholders and any other person participating in a sale of shares of our Common Stock registered under this prospectus will be subject to applicable provisions of the Exchange Act, and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the shares of our Common Stock by the selling stockholders and any other participating person. All of the foregoing may affect the marketability of the shares of our Common Stock and the ability of any person or entity to engage in market-making activities with respect to the shares of our Common Stock. In addition, 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 of our Common Stock against certain liabilities, including liabilities arising under the Securities Act.

LEGAL MATTERS

The validity of the securities being offered hereby will be passed upon for us by Morgan, Lewis & Bockius LLP, Boston, Massachusetts.

EXPERTS

The financial statements incorporated in this Prospectus by reference to the [Annual Report on Form 10-K for the year ended March 31, 2024](#) have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act, and in accordance with the Exchange Act, file annual, quarterly and special reports, proxy statements and other information with the SEC. These documents may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the Internet (www.sec.gov). Our corporate website address is www.replimune.com. Information contained on or accessible through our website is not a part of this prospectus, and the inclusion of our website address in this prospectus is an inactive textual reference only.

This prospectus is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth 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.

INFORMATION INCORPORATED BY REFERENCE

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. The information incorporated by reference is considered to be part of this prospectus, and because we are a smaller reporting company, later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings (including those made after the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement) we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until the termination of the offering of the shares covered by this prospectus.

- [our Annual Report on Form 10-K for the year ended March 31, 2024, filed with the SEC on May 16, 2024;](#)
- [our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2024, filed with the SEC on August 8, 2024;](#)
- our Current Reports on Form 8-K filed on [June 3, 2024](#), [June 6, 2024](#), and [June 13, 2024](#) (provided that any portions of such reports that are deemed furnished and not filed pursuant to instructions to Form 8-K shall not be incorporated by reference into this prospectus);
- our [definitive Proxy Statement on Schedule 14A for our 2024 Annual Meeting of Stockholders, filed on July 19, 2024](#) (but only with respect to information required by Part III of our [Annual Report on Form 10-K for the year ended March 31, 2024](#), which information updated and superseded information included in Part III of our [Annual Report on Form 10-K for the year ended March 31, 2024](#)); and
- our description of our Common Stock contained in the registration statement on [Form 8-A, filed on July 17, 2018](#), as the description therein has been updated and superseded by the description of our capital stock contained in [Exhibit 4.3](#) to our Annual Report on Form 10-K for the fiscal year ended March 31, 2024, as filed with the SEC on May 16, 2024, and including any amendments and reports filed for the purpose of updating such description.

As a smaller reporting company, we also are incorporating by reference any future information filed (rather than furnished) by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, after the date of the initial filing of the registration statement of which this prospectus is a part and before the effective date of the registration statement and after the date of this prospectus until the termination of the offering. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

Notwithstanding the foregoing, unless specifically stated to the contrary, none of the information that is not deemed “filed” with the SEC, including information furnished under Items 2.02 or 7.01 of any Current Report on Form 8-K, will be incorporated by reference into, or otherwise included in, this prospectus.

We make available, free of charge, through our website at www.replimune.com under “Investor and Media” our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Information contained on our website is not incorporated by reference into this prospectus and should not be considered part of this prospectus or any applicable prospectus supplement. In addition, the SEC maintains an Internet website that contains reports, proxy and information statements, and other information that we file with the SEC at www.sec.gov. You may also obtain, free of charge, a copy of any of these documents (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus) by writing or calling us at the following address and telephone number.

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Woburn, Massachusetts, 01801
(781) 222-9600

You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone to provide you with different information. Neither we nor the selling stockholders are making an offer of the Common Stock in any state where the offer is not permitted. You should not assume that the information in this prospectus or in the documents incorporated by reference is accurate as of any date other than the date on the front of this prospectus or those documents.

**11,338,515 Shares of Common Stock
Offered by the Selling Stockholders**



PROSPECTUS

, 2024

We have not authorized any dealer, salesperson or other person to give any information or represent anything not contained in this prospectus. You must not rely on any unauthorized information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus does not offer to sell any securities in any jurisdiction where it is unlawful. Neither the delivery of this prospectus, nor any sale made hereunder, shall create any implication that the information in this prospectus is correct after the date hereof.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the various expenses to be incurred in connection with the sale and distribution of the securities being registered hereby, all of which will be borne by Replimune Group, Inc. (other than commissions and discounts and similar selling expenses). All amounts shown are estimates except the SEC registration fee:

Item	Amount
SEC Registration Fee	\$ 15,790.08
Accounting Fees and Expenses	25,000
Legal Fees and Expenses	75,000
Miscellaneous Fees and Expenses	10,000
Total	<u>\$125,790.08</u>

Item 15. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law authorizes a corporation's board of directors to grant, and authorizes a court to award, indemnity to officers, directors, and other corporate agents.

As permitted by Delaware law, our certificate of incorporation provides that, to the fullest extent permitted by Delaware law, no director will be personally liable to us or our stockholders for monetary damages for breach of fiduciary duty as a director. Pursuant to Delaware law such protection would be not available for liability:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- an act or omission for which the liability of a director is expressly provided by an applicable statute, including unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the DGCL; or
- any transaction from which the director derived an improper personal benefit.

Our certificate of incorporation also provides that if Delaware law is amended after the approval by our stockholders of the certificate of incorporation to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of our directors will be eliminated or limited to the fullest extent permitted by Delaware law.

Our bylaws further provide that we must indemnify our directors and officers to the fullest extent permitted by Delaware law. Our bylaws also authorize us to indemnify any of our employees or agents and permit us to secure insurance on behalf of any officer, director, employee or agent for any liability arising out of his or her action in that capacity, whether or not Delaware law would otherwise permit indemnification.

In addition, our bylaws also provide that we are required to advance expenses to our directors and officers as incurred in connection with legal proceedings against them for which they may be indemnified and that the rights conferred in the bylaws are not exclusive.

We have entered into indemnification agreements with each of our directors and executive officers.

These agreements, among other things, require us to indemnify each director and officer to the fullest extent permitted by Delaware law, the certificate of incorporation and bylaws, for expenses such as, among other things, attorneys' fees, judgments, fines, and settlement amounts incurred by the director or executive officer in any action or proceeding, including any action by or in our right, arising out of the person's

services as our director or executive officer or as the director or executive officer of any subsidiary of ours or any other company or enterprise to which the person provides services at our request. We also have directors' and officers' liability insurance.

The SEC has taken the position that personal liability of directors for violation of the federal securities laws cannot be limited and that indemnification by us for any such violation is unenforceable. The limitation of liability and indemnification provisions in our certificate of incorporation and bylaws may discourage stockholders from bringing a lawsuit against our directors and officers for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions.

Item 16. Exhibits.

Exhibit Number	Description
3.1	Third Amended and Restated Certificate of Incorporation of Replimune Group, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Annual Report on Form 10-K, as filed on June 3, 2020).
3.2	Amended and Restated Bylaws of Replimune Group, Inc. (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K, as filed on July 24, 2018).
4.1	Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to Registration Statement on Form S-1/A, as filed on July 10, 2018).
4.2	Form of Pre-Funded Warrant (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, as filed on June 13, 2024).
4.3	Form of Registration Rights Agreement (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the SEC on June 13, 2024).
5.1*	Opinion of Morgan, Lewis & Bockius LLP
23.1*	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
23.2*	Consent of Morgan, Lewis & Bockius LLP (included in Exhibit 5.1)
24.1*	Power of Attorney (included on the signature page)
107*	Filing Fee Table

* Filed herewith.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that the undertakings set forth in paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Securities and Exchange Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been informed that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Woburn, Commonwealth of Massachusetts, on this 8th day of August, 2024.

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Sushil Patel and Shawn Glidden his or her true and lawful attorney-in- fact and agent with full power of substitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to sign any registration statement for the same offerings covered by the registration statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act, and all post- effective amendments thereto, and to file the same, with all exhibits thereto and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents or any of them, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Name	Title	Date
/s/ Sushil Patel Sushil Patel	Chief Executive Officer and Director (Principal Executive Officer)	August 8, 2024
/s/ Emily Hill Emily Hill	Chief Financial Officer (Principal Financial Officer)	August 8, 2024
/s/ Andrew Schwendenman Andrew Schwendenman	Chief Accounting Officer (Principal Accounting Officer)	August 8, 2024
/s/ Philip Astley-Sparke Philip Astley-Sparke	Director and Executive Chairman	August 8, 2024
/s/ Robert Coffin Robert Coffin	Director	August 8, 2024
/s/ Kapil Dhingra Kapil Dhingra	Director	August 8, 2024
/s/ Hyam Levitsky Hyam Levitsky	Director	August 8, 2024
/s/ Christy Olinger Christy Olinger	Director	August 8, 2024
/s/ Veleka Peeples-Dyer Veleka Peeples-Dyer	Director	August 8, 2024

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Paolo Pucci</u> Paolo Pucci	Director	August 8, 2024
<u>/s/ Joseph Slattery</u> Joseph Slattery	Director	August 8, 2024
<u>/s/ Dieter Weinand</u> Dieter Weinand	Director	August 8, 2024

Morgan Lewis

August 8, 2024

Replimune Group, Inc.
500 Unicorn Park Drive
Suite 303
Woburn, MA 01801

Re: Replimune Group, Inc. Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to Replimune Group, Inc., a Delaware corporation (the “Company”), in connection with the filing of the Company’s Registration Statement on Form S-3 (the “Registration Statement”) under the Securities Act of 1933, as amended (the “Act”), with the Securities and Exchange Commission (the “SEC”). Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Registration Statement.

The Registration Statement relates to the proposed resale by the selling stockholders identified in the Registration Statement (the “Selling Stockholders”) of up to an aggregate of 11,338,515 shares of the Company’s common stock, par value \$0.001 per share (“Common Stock”), which consist of (i) 5,668,937 shares of Common Stock held by the selling stockholders (the “Initial Shares”), and (ii) 5,669,578 shares of Common Stock (the “Pre-Funded Warrant Shares”), issuable upon the exercise of pre-funded warrants held by certain of the Selling Stockholders (the “Pre-Funded Warrants”).

In connection with this opinion letter, we have examined the Registration Statement and originals, or copies certified or otherwise identified to our satisfaction, of the Third Amended and Restated Articles of Incorporation, as amended through the date hereof, and the Amended and Restated By-laws, as in effect on the date hereof, of the Company, certain resolutions of the Company’s Board of Directors relating to the Registration Statement, and such other documents, records and other instruments as we have deemed appropriate for purposes of the opinion set forth herein.

We have assumed the genuineness of all signatures, the legal capacity of all natural persons, the authenticity of the documents submitted to us as originals, the conformity with the originals of all documents submitted to us as certified, facsimile or photostatic copies and the authenticity of the originals of all documents submitted to us as copies.

August 8, 2024

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We have also assumed that (i) the Registration Statement and any amendments thereto will have become effective and comply with all applicable laws and no stop order suspending the Registration Statement's effectiveness will have been issued and remain in effect, in each case, at the time that any of the Initial Shares and the Pre-Funded Warrant Shares are offered and sold as contemplated by the Registration Statement and (ii) all of the Shares and the Pre-Funded Warrant Shares will be offered and sold in compliance with applicable federal and state securities laws and in the manner stated in the Registration Statement and any applicable prospectus supplement.

Based upon the foregoing and subject to the qualifications and assumptions stated herein, we are of the opinion that (i) the Initial Shares have been duly authorized, validly issued and fully paid and are non-assessable, and (ii) the Pre-Funded Warrant Shares, when duly issued and delivered in accordance with the terms of the Pre-Funded Warrants (including the payment of the applicable exercise price), and provided that a sufficient number of authorized but unissued shares of Common Stock are available at the time of such exercise, will be validly issued, fully paid and non-assessable.

We do not express any opinion with respect to the effect on the opinions stated herein of any bankruptcy, insolvency, reorganization, moratorium, fraudulent transfer, preference and other similar laws affecting creditors' rights generally, and the opinions stated herein are limited by such laws and by general principles of equity (regardless of whether enforcement is sought in equity or at law).

The opinions expressed herein are limited to the laws of the State of Delaware and the federal securities laws of United States.

We hereby consent to the use of this opinion as Exhibit 5.1 to the Registration Statement and to the reference to us under the caption "Legal Matters" in the prospectus included in the Registration Statement. In giving such consent, we do not hereby admit that we are acting within the category of persons whose consent is required under Section 7 of the Securities Act or the rules or regulations of the SEC thereunder.

[Signature Page Follows]

August 8, 2024
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Very truly yours,

/s/ Morgan, Lewis & Bockius LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-3 of Replimune Group, Inc. of our report dated May 16, 2024 relating to the financial statements, which appears in Replimune Group, Inc.'s Annual Report on Form 10-K for the year ended March 31, 2024. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ Pricewaterhouse Coopers LLP

Boston, Massachusetts
August 8, 2024

Calculation of Filing Fee Tables

S-3
(Form Type)Replimune Group, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered and Carry Forward Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered (1)	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee	Carry Forward Form Type	Carry Forward File Number	Carry Forward Initial effective date	Filing Fee Previously Paid In Connection with Unsold Securities to be Carried Forward
Newly Registered Securities												
Fees to be Paid	Equity	Common Stock, par value \$0.001 per share	457(c)	11,338,515	\$9.44 ⁽²⁾	\$106,978,889.03	0.00014760	\$15,790.08	—	—	—	—
Fees Previously Paid	—	—	—	—	—	—	—	—	—	—	—	—
Carry Forward Securities												
Carry Forward Securities	—	—	—	—	—	—	—	—	—	—	—	—
Total Offering Amounts						\$106,978,889.03	—	\$15,790.08				
Total Fees Previously Paid						—	—	—				
Total Fee Offsets						—	—	—				
Net Fee Due						—	—	\$15,790.08				

- (1) Shares of Common Stock will be offered for resale by the selling stockholders named in and pursuant to the prospectus contained in the Registration Statement to which this exhibit is attached. The Registration Statement registers the resale of an aggregate of 11,338,515 shares of the registrant's Common Stock. Pursuant to Rule 416 under the Securities Act of 1933, as amended, or the Securities Act, the shares of Common Stock being registered hereunder include an indeterminable number of additional shares of Common Stock that may be issuable as a result of stock splits, stock dividends or similar transactions.
- (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(c) of the Securities Act, on the basis of the high and low prices for a share of the registrant's Common Stock as reported on August 5, 2024, which date is a date within five business days prior to the filing of the Registration Statement to which this exhibit is attached.