
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 13D

Under the Securities Exchange Act of 1934

Kailera Therapeutics, Inc.

(Name of Issuer)

Common Stock, \$0.00001 par value per share

(Title of Class of Securities)

(CUSIP Number)

**Bain Capital Investors, LLC
200 Clarendon Street,
Boston, MA, 02116
617-516-2000**

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

04/16/2026

(Date of Event Which Requires Filing of This Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§ 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box. ☐

The information required on the remainder of this cover page shall not be deemed to be “filed” for the purpose of Section 18 of the Securities Exchange Act of 1934 (“Act”) or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

SCHEDULE 13D

CUSIP No.

Name of reporting person

BCPE Perseus Investor, LP

Check the appropriate box if a member of a Group (See Instructions)

☐ (a)

☐ (b)

SEC use only

4	Source of funds (See Instructions)
	WC
5	Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e)
	☐
6	Citizenship or place of organization
	DELAWARE
	Sole Voting Power
7	0.00
Number of Shares Beneficially Owned by Each Reporting Person	Shared Voting Power
8	26,255,581.00
	Sole Dispositive Power
9	0.00
With:	Shared Dispositive Power
10	26,255,581.00
	Aggregate amount beneficially owned by each reporting person
11	26,255,581.00
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions)
	☐
13	Percent of class represented by amount in Row (11)
	20.27 %
14	Type of Reporting Person (See Instructions)
	PN

SCHEDULE 13D

Item 1. Security and Issuer

Title of Class of Securities:

(a) Common Stock, \$0.00001 par value per share

Name of Issuer:

(b) Kailera Therapeutics, Inc.

Address of Issuer's Principal Executive Offices:

(c) 180 Third Avenue, 4th Floor, Waltham, MASSACHUSETTS , 02451.

Item 2. Identity and Background

This Schedule 13D is filed by BCPE Perseus Investor, LP, a Delaware limited partnership (the "Reporting Person"). Bain Capital Investors, LLC, a Delaware limited liability company ("BCI"), is the manager of Bain Capital XIV General Partner, LLC, a Delaware limited liability company ("BCPE Fund XIV GP"), which is the general partner of Bain Capital Fund XIV, L.P., a Delaware limited partnership ("BCPE Fund XIV"), which is the managing member of BCPE Perseus Investor GP, LLC, a Delaware limited liability company ("BCPE Perseus GP" and, together with the Reporting Person, BCI, BCPE Fund XIV GP and BCPE Fund XIV, the "Bain Capital Entities"), which is the general partner of the Reporting Person. As a result, BCI may be deemed to share voting and dispositive power with respect to the securities held by the Reporting Person. Voting and investment decisions with respect to the securities held by the Reporting Person are made by the Partners of BCI.

(b) c/o Bain Capital Investors, LLC, 200 Clarendon Street, Boston, Massachusetts 02116.

(c) Investment in securities.

(d) During the last five years, none of the Bain Capital Entities have been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) During the last five years, none of the Bain Capital Entities have been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

(f) See Item 2(a) hereof.

Item 3. Source and Amount of Funds or Other Consideration

Prior to the Issuer's initial public offering, the Reporting Person held 17,857,143 shares of the Issuer's Series B Preferred Stock. Upon the closing of the Issuer's initial public offering, each share of the Issuer's Series B Preferred Stock automatically converted into one share of Common Stock. As a result, following the conversion, the Reporting Person held 17,857,143 shares of Common Stock. On April 20, 2026, the Reporting Person purchased 8,398,438 shares of Common Stock from the underwriters in the Issuer's initial public offering at a price of \$16.00 per share for a total purchase price of \$134,375,008. The Reporting Person used its own working capital to acquire all of the foregoing equity securities of the Issuer.

Item 4. Purpose of Transaction

The information set forth in Item 3 of this Schedule 13D is incorporated by reference in its entirety into this Item 4. Andrew Kaplan, a Partner of BCI, is a member of the Issuer's board of directors (the "Board"). The Reporting Person acquired the securities reported herein for investment purposes. In its capacity as a significant stockholder of the Issuer, the Reporting Person intends to take an active role in working with the Issuer's management and the Board on operational, financial and strategic initiatives. The Reporting Person reviews and intends to continue to review, on an ongoing and continuing basis, their investment in the Issuer. Depending upon the factors discussed below and subject to applicable law, the Reporting Person may from time to time acquire additional securities of the Issuer or sell or otherwise dispose of some or all of their securities of the Issuer. Any transactions that the Reporting Persons may pursue may be made at any time and from time to time without prior notice and will depend upon a variety of factors, including, without limitation, current and anticipated future trading prices of the securities of the Issuer, the financial condition, results of operations and prospects of the Issuer, general economic, financial market and industry conditions, other investment and business opportunities available to the Reporting Person, tax considerations and other factors.

Item 5. Interest in Securities of the Issuer

The information set forth in Items 2 and 3 and on the cover pages of this Schedule 13D is incorporated by reference in its entirety into this Item 5. As of the date hereof the Reporting Person directly holds 26,255,581 shares of Common Stock, representing approximately 20.3% of the outstanding shares of Common Stock. The percentage of the outstanding shares of Common Stock held by the Reporting Person is based on 129,537,314 shares of Common Stock issued and outstanding, as reported by the Issuer in its prospectus relating to its initial public offering (after giving effect to the full exercise of the underwriters' option to purchase additional shares), filed with the Securities and Exchange Commission pursuant to Rule 424(b) under the Securities Act of 1933, as amended, on April 17, 2026.

(a) See Item 5(a) hereof.

(b) See Item 3 hereof.

(c) Except as otherwise described in this Item 5, no one other than the Reporting Person has the right to receive, or the power to direct the receipt of, dividends from, or the proceeds from the sale of, any of the shares of Common Stock beneficially owned by the Reporting Person as described in this Item 5.

(d) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships With Respect to Securities of the Issuer

The information set forth in Item 3 of this Schedule 13D is incorporated by reference in its entirety into this Item 6. Investor Rights Agreement. The Reporting Person is party to the Amended and Restated Investor Rights Agreement (the "Investor Rights Agreement"), dated October 5, 2025, with the Issuer and certain other stockholders of the Issuer. The Investor Rights Agreement provides the Reporting Person with the following rights with respect to the registration of its shares of Common Stock: Form S-1 Registration Rights. If at any time beginning 180 days after the closing date of the Issuer's initial public offering the holders of the majority of the registrable securities request in writing that the Issuer effect a registration with respect to all or part of such registrable securities then outstanding and having an anticipated aggregate offering price that would exceed \$25,000,000, net of expenses, the Issuer may be required to register their shares. The Issuer is obligated to effect at most two registrations in response to these demand registration rights. Piggyback Registration Rights. If, at any time after the Issuer's initial public offering, the Issuer proposes to register any shares of its Common Stock under the Securities Act of 1933, as amended, subject to certain exceptions, the holders of registrable securities will be entitled to notice of the registration and to include their shares of registrable securities in the registration. Form S-3 Registration. If, at any time after the Issuer becomes entitled under the Securities Act of 1933, as amended, to register its shares on a registration statement on Form S-3, the holders of at least 25% of the registrable securities request in writing that the Issuer effect a registration with respect to registrable securities at an aggregate price to the public in the offering of at least \$10,000,000, the Issuer will be required to effect such registration. Lock-Up Agreement. In connection with the Issuer's initial public offering, the Reporting Person and Mr. Kaplan each entered into a lock-up agreement (a "Lock-Up Agreement") with the representatives of the several underwriters. Pursuant to the Lock-Up Agreement, the Reporting Person and Mr. Kaplan each agreed, subject to certain exceptions, not to sell or otherwise transfer any shares of the Issuer's Common Stock or securities convertible into or exercisable or exchangeable for, shares of Common Stock for 180 days after the date of the prospectus relating to the Issuer's initial public offering without the prior written consent of the representatives. The foregoing summaries of the Investor Rights Agreement and Lock-Up Agreement do not purport

to be complete and are qualified in their entirety by reference to the Investor Rights Agreement and Lock-Up Agreement, each of which is filed as an exhibit hereto and incorporated by reference herein.

Item 7. Material to be Filed as Exhibits.

Exhibit A. Investor Rights Agreement (incorporated by reference from Exhibit 10.11 to the Issuer's Registration Statement on Form S-1 (File No. 333-294690). Exhibit B. Lock-Up Agreement.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

BCPE Perseus Investor, LP

Signature: /s/ Andrew Kaplan

Name/Title: Andrew Kaplan, Partner of Bain Capital
Investors, LLC

Date: 04/23/2026