

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

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SCHEDULE 13D

Under the Securities Exchange Act of 1934

(Amendment No. \_\_\_)\*

Black Diamond Therapeutics, Inc.

\_\_\_\_\_  
(Name of Issuer)

Common Stock, par value \$0.0001 per share

\_\_\_\_\_  
(Title of Class of Securities)

09203E105

\_\_\_\_\_  
(CUSIP Number)

RA Capital Management, L.P.  
200 Berkeley Street, 18<sup>th</sup> Floor  
Boston, MA 02116  
Telephone: 617.778.2500  
Attn: Peter Kolchinsky

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

February 3, 2020

\_\_\_\_\_  
(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.

**Note:** Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Rule 13d-7 for other parties to whom copies are to be sent.

\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

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).

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1 Names of Reporting Persons.

**RA Capital Management, L.P.**

2 Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Source of Funds (See Instructions):

AF

5 Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e):

6 Citizenship or Place of Organization. **Delaware**

Number of Shares Beneficially Owned by Each Reporting Person With	7	Sole Voting Power	<b>0 shares</b>
	8	Shared Voting Power	<b>2,589,904 shares</b>
	9	Sole Dispositive Power	<b>0 shares</b>
	10	Shared Dispositive Power	<b>2,589,904 shares</b>

11 Aggregate Amount Beneficially Owned by Each Reporting Person  
**2,589,904 shares**

12 Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13 Percent of Class Represented by Amount in Row (11)

**7.2%<sup>1</sup>**

14 Type of Reporting Person (See Instructions)

**IA, PN**

<sup>1</sup>The reporting person is the beneficial owner of 2,589,904 shares of the Issuer's Common Stock which constitute approximately 7.2% of the class outstanding. The percentage calculation assumes that there are currently 35,910,705 outstanding shares of Common Stock of the Issuer, based upon the closing of the Issuer's initial public offering, as reported in the Issuer's prospectus filed with the Securities and Exchange Commission ("SEC") on January 30, 2020.

1 Names of Reporting Persons.

**Peter Kolchinsky**

2 Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Source of Funds (See Instructions):

AF

5 Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e):

6 Citizenship or Place of Organization. **United States**

Number of Shares Beneficially Owned by Each Reporting Person With	7	Sole Voting Power	<b>0 shares</b>
	8	Shared Voting Power	<b>2,589,904 shares</b>
	9	Sole Dispositive Power	<b>0 shares</b>
	10	Shared Dispositive Power	<b>2,589,904 shares</b>

11 Aggregate Amount Beneficially Owned by Each Reporting Person  
**2,589,904 shares**

12 Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13 Percent of Class Represented by Amount in Row (11)

**7.2%<sup>1</sup>**

14 Type of Reporting Person (See Instructions)

**HC, IN**

<sup>1</sup> The reporting person is the beneficial owner of 2,589,904 shares of the Issuer's Common Stock which constitute approximately 7.2% of the class outstanding. The percentage calculation assumes that there are currently 35,910,705 outstanding shares of Common Stock of the Issuer, based upon the closing of the Issuer's initial public offering, as reported in the Issuer's prospectus filed with the Securities and Exchange Commission ("SEC") on January 30, 2020.

1 Names of Reporting Persons.

**Rajeev Shah**

2 Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Source of Funds (See Instructions):

AF

5 Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e):

6 Citizenship or Place of Organization. **United States**

Number of Shares Beneficially Owned by Each Reporting Person With	7	Sole Voting Power	<b>0 shares</b>
	8	Shared Voting Power	<b>2,589,904 shares</b>
	9	Sole Dispositive Power	<b>0 shares</b>
	10	Shared Dispositive Power	<b>2,589,904 shares</b>

11 Aggregate Amount Beneficially Owned by Each Reporting Person  
**2,589,904 shares**

12 Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13 Percent of Class Represented by Amount in Row (11)

**7.2%<sup>1</sup>**

14 Type of Reporting Person (See Instructions)

**HC, IN**

<sup>1</sup> The reporting person is the beneficial owner of 2,589,904 shares of the Issuer's Common Stock which constitute approximately 7.2% of the class outstanding. The percentage calculation assumes that there are currently 35,910,705 outstanding shares of Common Stock of the Issuer, based upon the closing of the Issuer's initial public offering, as reported in the Issuer's prospectus filed with the Securities and Exchange Commission ("SEC") on January 30, 2020.

**SCHEDULE 13D****Item 1. Security and Issuer**

This Schedule 13D (the "Statement") relates to common stock, par value \$0.0001 per share (the "Common Stock"), of Black Diamond Therapeutics, Inc., a Delaware corporation (the "Issuer"). The address of the principal executive offices of the Issuer is: 139 Main Street, Cambridge, MA 02142.

**Item 2. Identity and Background**

(a) This Schedule 13D is being filed on behalf of RA Capital Management, L.P. ("RA Capital"), Peter Kolchinsky, and Rajeev Shah. RA Capital, Dr. Kolchinsky, and Mr. Shah are collectively referred to herein as the "Reporting Persons."

The Common Stock reported herein includes 1,924,164 shares held by RA Capital Healthcare Fund, L.P. (the "Fund"), 353,814 shares held in a separately managed account (the "Account"), and 311,926 shares held by RA Capital Nexus Fund, L.P. (the "Nexus Fund"). RA Capital Healthcare Fund GP, LLC is the general partner of the Fund and RA Capital Nexus Fund GP, LLC is the general partner of the Nexus Fund. The general partner of RA Capital is RA Capital Management GP, LLC, of which Dr. Kolchinsky and Mr. Shah are the controlling persons. RA Capital serves as investment adviser for the Fund, the Account, and the Nexus Fund and may be deemed a beneficial owner, for purposes of Section 13(d) of the Securities Exchange Act of 1934 (the "Act"), of any securities of the Issuer held by the Fund, the Account, or the Nexus Fund. The Fund and the Nexus Fund have delegated to RA Capital the sole power to vote and the sole power to dispose of all securities held in the Fund's and the Nexus Fund's portfolio, including the shares of the Issuer's Common Stock reported herein. Because the Fund and the Nexus Fund have divested themselves of voting and investment power over the reported securities they hold and may not revoke that delegation on less than 61 days' notice, the Fund and the Nexus Fund disclaim beneficial ownership of the securities they hold for purposes of Section 13(d) of the Act and therefore disclaim any obligation to report ownership of the reported securities under Section 13(d) of the Act. As managers of RA Capital, Dr. Kolchinsky and Mr. Shah may be deemed beneficial owners, for purposes of Section 13(d) of the Act, of any securities of the Issuer beneficially owned by RA Capital. RA Capital, Dr. Kolchinsky, and Mr. Shah disclaim beneficial ownership of the securities reported in this Schedule 13D Statement (the "Statement") other than for the purpose of determining their obligations under Section 13(d) of the Act, and the filing of the Statement shall not be deemed an admission that either RA Capital, Dr. Kolchinsky, or Mr. Shah is the beneficial owner of such securities for any other purpose.

(b) The business address of each of the Reporting Persons is: 200 Berkeley Street, 18<sup>th</sup> Floor, Boston, MA 02116.

(c) The Fund and the Nexus Fund are private investment vehicles. RA Capital provides investment management services to the Fund, the Account, and the Nexus Fund. The principal occupation of Dr. Kolchinsky and Mr. Shah is investment management.

(d) None of the Reporting Persons have, during the last five years, been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) None of the Reporting Persons have, during the last five years, 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 6 of the cover pages.

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**Item 3. Source and Amount of Funds or Other Consideration**

Prior to the Issuer's initial public offering (the "IPO"), the Reporting Persons caused the Fund, the Account, and the Nexus Fund to purchase equity interests in the Issuer's predecessor in a private placement, and those interests automatically converted into 1,589,904 shares of Common Stock immediately upon completion of the IPO. The Fund, the Account, and the Nexus Fund also purchased 1,000,000 shares of Common Stock from the underwriters of the IPO. All purchases were for cash and were funded by working capital of the Fund, the Account, and the Nexus Fund.

**Item 4. Purpose of Transaction**

The Reporting Persons acquired the Common Stock reported herein for investment purposes and not with an intent, purpose or effect of changing control of the Issuer. Although the Reporting Persons currently have no plan or proposal to acquire any additional Common Stock or to dispose of any of the Common Stock reported herein, the Reporting Persons may acquire additional Common Stock from time to time or dispose of Common Stock they beneficially own, consistent with their investment purposes and in amounts to be determined by the Reporting Persons based upon a number of factors, including, without limitation, their ongoing assessment of the Issuer's business prospects, prevailing market conditions, the availability of other investment opportunities, and/or other considerations.

In addition, consistent with their investment purpose, the Reporting Persons may engage in communications with persons associated with the Issuer, including shareholders of the Issuer, officers of the Issuer and/or members of the board of directors of the Issuer, to discuss matters regarding the Issuer, including but not limited to its operations and strategic direction. Mr. Shah currently serves as a director of the Issuer and therefore will engage in regular discussions with the Issuer's board of directors and management as part of his duties as a director.

The Reporting Persons have no plans or proposals that relate to, or could result in, any of the matters referred to in paragraphs (a) through (j), inclusive, of the instructions to Item 4 of Schedule 13D.

The Reporting Persons may, however, change their purpose and formulate and implement plans or proposals with respect to the Issuer at any time and from time to time. Any such action may be made by the Reporting Persons alone or in conjunction with other shareholders, potential acquirers, financing sources and/or other third parties and could include one or more purposes, plans or proposals that relate to or would result in actions required to be reported herein in accordance with Item 4 of Schedule 13D.

**Item 5. Interest in Securities of the Issuer**

(a) and (b) See Items 7-11 of the cover pages and Item 2 above.

(c) The following table lists the Reporting Persons' transactions in Common Stock that were effected during the sixty day period prior to the filing of this Schedule 13D:

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Transaction	Date	No. Shares	Price
Conversion	3-Feb-2020	956,723*, 186,749^, and 163,353	(1)
Conversion	3-Feb-2020	181,783*, 30,526^, and 70,770	(2)
Purchase	3-Feb-2020	785,658*, 136,539^, and 77,803	\$19.00

- (1) The Reporting Persons acquired Series B Preferred Stock of the Issuer's predecessor in two tranches which closed on or around December 21, 2018 and August 8, 2019. All Series B Preferred Stock converted automatically on a 1-for-3.01585 basis into Common Stock in connection with the IPO.
- (2) The Reporting Persons acquired Series C Preferred Stock of the Issuer's predecessor which closed on or around November 25, 2019. All Series C Preferred Stock converted automatically on a 1-for-3.01585 basis into Common Stock in connection with the IPO.

Shares marked with an \* were acquired by the Fund, shares marked with an ^ were acquired by the Account. The remaining shares were acquired for the Nexus Fund.

(d) Not applicable.

(e) Not applicable.

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

The Reporting Persons have entered into a standard lock-up agreement with the Issuer and the underwriters of the IPO, prohibiting any sale of certain Common Stock holdings reported herein during the 180 days following the closing of the offering. The Reporting Persons may be released from lock-up prior to the expiration of the lock-up period at the sole discretion of the underwriters.

**Item 7. Material to Be Filed as Exhibits**

Exhibit 1 Joint Filing Agreement by and among the Reporting Persons.

**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.

Date: February 05, 2020

RA CAPITAL MANAGEMENT, L.P.

By: /s/ Peter Kolchinsky

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Peter Kolchinsky  
Manager

PETER KOLCHINSKY

/s/ Peter Kolchinsky

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RAJEEV SHAH

/s/ Rajeev Shah

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Exhibit 1JOINT FILING AGREEMENT

This Joint Filing Agreement, dated as of February 05, 2020, is by and among RA Capital Management, L.P., Peter Kolchinsky, and Rajeev Shah (the foregoing are collectively referred to herein as the "Filers").

Each of the Filers may be required to file with the United States Securities and Exchange Commission a statement on Schedule 13G and/or 13D with respect to Common Stock of Black Diamond Therapeutics, Inc. beneficially owned by them from time to time.

Pursuant to and in accordance with Rule 13(d)(1)(k) promulgated under the Securities Exchange Act of 1934, as amended, the Filers hereby agree to file a single statement on Schedule 13G and/or 13D (and any amendments thereto) on behalf of each of such parties, and hereby further agree to file this Joint Filing Agreement as an exhibit to such statement, as required by such rule.

This Joint Filing Agreement may be terminated by any of the Filers upon one week's prior written notice or such lesser period of notice as the Filers may mutually agree.

Executed and delivered as of the date first above written.

RA CAPITAL MANAGEMENT, L.P.

By: /s/ Peter Kolchinsky

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Peter Kolchinsky  
Manager

PETER KOLCHINSKY

/s/ Peter Kolchinsky

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RAJEEV SHAH

/s/ Rajeev Shah

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