

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

**SCHEDULE 13G
(Rule 13d-102)**

**INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULES 13d-1 (b), (c) AND (d) AND AMENDMENTS
THERE TO FILED PURSUANT TO 13d-2 (b)
(Amendment No.)***

Homology Medicines, Inc.

(Name of Issuer)

Common Stock, par value \$0.0001 per share

(Title of Class of Securities)

438083107

(CUSIP Number)

December 31, 2018

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- ☐ Rule 13d-1(b)
- ☐ Rule 13d-1(c)
- ☒ Rule 13d-1(d)

*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).

1	Names of Reporting Persons. 5AM Ventures IV, L.P.	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 5,904,884 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 5,904,884 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 5,904,884 shares (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 15.7% (3)	
12	Type of Reporting Person* PN	

- (1) This Schedule 13G is filed by 5AM Ventures IV, L.P., a Delaware limited partnership (“Ventures IV”), 5AM Co-Investors IV, L.P., a Delaware limited partnership (“Co-Investors IV”), 5AM Partners IV, LLC, a Delaware limited liability company (“Partners IV”), Dr. John D. Diekman (“Diekman”), Andrew J. Schwab (“Schwab”), and Dr. Scott M. Rocklage (“Rocklage” and together with Ventures IV, Co-Investors IV, Partners IV, Diekman and Schwab, collectively, the “Reporting Persons”). The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Partners IV serves as the sole general partner of Ventures IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018.
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

1	Names of Reporting Persons. 5AM Co-Investors IV, L.P.	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 246,035 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 246,035 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 246,035 shares of Common Stock (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 0.7% (3)	
12	Type of Reporting Person* PN	

- (1) This Schedule 13G is filed by the Reporting Persons. The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Partners IV serves as the sole general partner of Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Co-Investors IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018.
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

1	Names of Reporting Persons. 5AM Partners IV, LLC	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 6,150,919 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 6,150,919 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 6,150,919 shares (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 16.4% (3)	
12	Type of Reporting Person* OO	

- (1) This Schedule 13G is filed by the Reporting Persons. The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Includes 5,904,884 shares of Common Stock held by Ventures IV and 246,035 shares of Common Stock held by Co-Investors IV. Partners IV serves as the sole general partner of Ventures IV and Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV and Co-Investors IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018.
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

1	Names of Reporting Persons. Dr. John D. Diekman	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 6,150,919 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 6,150,919 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 6,150,919 shares (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 16.4% (3)	
12	Type of Reporting Person* IN	

- (1) This Schedule 13G is filed by the Reporting Persons. The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Includes 5,904,884 shares of Common Stock held by Ventures IV and 246,035 shares of Common Stock held by Co-Investors IV. Partners IV serves as the sole general partner of Ventures IV and Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV and Co-Investors IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018.
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

1	Names of Reporting Persons. Andrew J. Schwab	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 6,150,919 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 6,150,919 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 6,150,919 shares (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 16.4% (3)	
12	Type of Reporting Person* IN	

- (1) This Schedule 13G is filed by the Reporting Persons. The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Includes 5,904,884 shares of Common Stock held by Ventures IV and 246,035 shares of Common Stock held by Co-Investors IV. Partners IV serves as the sole general partner of Ventures IV and Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV and Co-Investors IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018..
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

1	Names of Reporting Persons. Dr. Scott M. Rocklage	
2	Check the Appropriate Box if a Member of a Group*	
	(a)	<input type="radio"/> o
	(b)	<input checked="" type="radio"/> x(1)
3	SEC Use Only	
4	Citizenship or Place of Organization United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0 shares
	6	Shared Voting Power 6,150,919 shares (2)
	7	Sole Dispositive Power 0 shares
	8	Shared Dispositive Power 6,150,919 shares (2)
9	Aggregate Amount Beneficially Owned by Each Reporting Person 6,150,919 shares (2)	
10	Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares* <input type="radio"/> o	
11	Percent of Class Represented by Amount in Row 9 16.4% (3)	
12	Type of Reporting Person* IN	

- (1) This Schedule 13G is filed by the Reporting Persons. The Reporting Persons expressly disclaim status as a “group” for purposes of this Schedule 13G.
- (2) Includes 5,904,884 shares of Common Stock held by Ventures IV and 246,035 shares of Common Stock held by Co-Investors IV. Partners IV serves as the sole general partner of Ventures IV and Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV and Co-Investors IV. The information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018.
- (3) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer’s Form 10-Q filed on November 13, 2018.

Introductory Note: This Statement on Schedule 13G (this “Statement”) is filed on behalf of the Reporting Persons, in respect of shares of Common Stock, par value \$0.0001 per share (“Common Stock”), of Homology Medicines, Inc., a Delaware corporation (the “Issuer”).

Item 1

- (a) Name of Issuer:
Homology Medicines, Inc.
- Address of Issuer’s Principal Executive Offices:
On Patriots Park
Bedford, MA 01730

Item 2

- (a) Name of Person(s) Filing:
5AM Ventures IV, L.P. (“Ventures IV”)
5AM Co-Investors IV, L.P. (“Co-Investors IV”)
5AM Partners IV, LLC (“Partners IV”)
Dr. John D. Diekman (“Diekman”)
Andrew J. Schwab (“Schwab”)
Dr. Scott M. Rocklage (“Rocklage”)
- (b) Address of Principal Business Office:
c/o 5AM Ventures
501 Second Street, Suite 350
San Francisco, CA 94107
- (b) Citizenship:

Entities:	5AM Ventures IV, L.P.	-	Delaware
	5AM Co-Investors IV, L.P.	-	Delaware
	5AM Partners IV, LLC	-	Delaware
Individuals:	Diekman	-	United States of America
	Schwab	-	United States of America
	Rocklage	-	United States of America
- (d) Title of Class of Securities:
Common Stock
- (e) CUSIP Number:
438083107

Item 3 Not applicable.

Item 4 Ownership.

The following information with respect to the ownership of the Common Stock by the Reporting Persons filing this statement on Schedule 13G is provided as of December 31, 2018:

Reporting Persons	Shares Held Directly	Sole Voting Power	Shared Voting Power	Sole Dispositive Power	Shared Dispositive Power	Beneficial Ownership	Percentage of Class (4)
Ventures IV (1) (3)	5,904,884	—	5,904,884	—	5,904,884	5,904,884	15.7%
Co-Investors IV (2) (3)	246,035	—	246,035	—	246,035	246,035	0.7%
Partners IV (1) (2) (3)	—	—	6,150,919	—	6,150,919	6,150,919	16.4%
Diekman (1) (2) (3)	—	—	6,150,919	—	6,150,919	6,150,919	16.4%
Schwab (1) (2) (3)	—	—	6,150,919	—	6,150,919	6,150,919	16.4%
Rocklage (1) (2) (3)	—	—	6,150,919	—	6,150,919	6,150,919	16.4%

(1) Includes 5,904,884 shares of Common Stock held by Ventures IV.

(2) Includes 246,035 shares of Common Stock held by Co-Investors IV.

(3) Partners IV serves as the sole general partner of Ventures IV and Co-Investors IV. Diekman, Schwab and Rocklage are managing members of Partners IV and share voting and dispositive power over the shares held by Ventures IV and Co-Investors IV.

(4) This percentage is calculated based upon 37,495,773 shares of Common Stock outstanding as of November 5, 2018 as indicated in the Issuer's Form 10-Q filed on November 13, 2018.

Item 5 Ownership of Five Percent or Less of a Class.

If this statement is being filed to report the fact that as of the date hereof, the Reporting Persons have ceased to be the beneficial owner of more than five percent of the class of securities, check the following: ☐

Item 6 Ownership of More than Five Percent on Behalf of Another Person.

Not applicable.

Item 7 Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company.

Not applicable.

Item 8 Identification and Classification of Members of the Group.

Not applicable.

Item 9 Notice of Dissolution of Group.

Not applicable.

Item 10 **Certification.**
Not applicable.

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.

Dated: February 13, 2019

5AM Ventures IV, L.P.

By: 5AM Partners IV, LLC
 its General Partner

By: /s/ Andrew J. Schwab
 Name: Andrew J. Schwab
 Title: Managing Member

5AM Co-Investors IV, L.P.

By: 5AM Partners IV, LLC
 its General Partner

By: /s/ Andrew J. Schwab
 Name: Andrew J. Schwab
 Title: Managing Member

5AM Partners IV, LLC

By: /s/ Andrew J. Schwab
 Name: Andrew J. Schwab
 Title: Managing Member

/s/ Dr. John D. Diekman
Dr. John D. Diekman

/s/ Andrew J. Schwab
Andrew J. Schwab

/s/ Dr. Scott M. Rocklage
Dr. Scott M. Rocklage

Exhibit(s):

A - Joint Filing Statement

EXHIBIT A

JOINT FILING STATEMENT

We, the undersigned, hereby express our agreement that the attached Schedule 13G (or any amendments thereto) relating to the Common Stock of Homology Medicines, Inc. is filed on behalf of each of us.

Dated: February 13, 2019

5AM Ventures IV, L.P.

By: 5AM Partners IV, LLC
its General Partner

By: /s/ Andrew J. Schwab
Name: Andrew J. Schwab
Title: Managing Member

5AM Co-Investors IV, L.P.

By: 5AM Partners IV, LLC
its General Partner

By: /s/ Andrew J. Schwab
Name: Andrew J. Schwab
Title: Managing Member

5AM Partners IV, LLC

By: /s/ Andrew J. Schwab
Name: Andrew J. Schwab
Title: Managing Member

/s/ Dr. John D. Diekman
Dr. John D. Diekman

/s/ Andrew J. Schwab
Andrew J. Schwab

/s/ Dr. Scott M. Rocklage
Dr. Scott M. Rocklage
