

Epizyme, Inc.
Form SC 13G
February 12, 2014

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

SCHEDULE 13G
UNDER THE SECURITIES EXCHANGE ACT OF 1934

(Amendment No.)*

EpiZyme, Inc.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

29428V104

(CUSIP Number)

December 31, 2013

(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 the disclosures provided in a prior cover page.

The information required in 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).

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM BioVentures IV-QP, L.P.

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Delaware

5. Sole Voting Power

Number of

Shares 2,328,958

6. Shared Voting Power

Beneficially

Owned by 0

7. Sole Dispositive Power

Each

Reporting

Person 2,328,958

8. Shared Dispositive Power

With:

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,328,958

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

8.2%

12. Type of Reporting Person (See Instructions)

PN

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM BioVentures IV GmbH & Co. Beteiligungs KG

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Germany

5. Sole Voting Power

Number of

Shares 89,724

6. Shared Voting Power

Beneficially

Owned by 0

Each 7. Sole Dispositive Power

Reporting

Person 89,724

8. Shared Dispositive Power

With:

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

89,724

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

0.3%

12. Type of Reporting Person (See Instructions)

PN

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM BioVentures IV Strategic Fund, L.P.

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Delaware

5. Sole Voting Power

Number of

Shares 395,579

6. Shared Voting Power

Beneficially

Owned by 0

Each 7. Sole Dispositive Power

Reporting

Person 395,579

8. Shared Dispositive Power

With:

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

395,579

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

1.4%

12. Type of Reporting Person (See Instructions)

PN

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM Asset Management Investors BV4 LLC

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Delaware

5. Sole Voting Power

Number of

Shares 66,224

6. Shared Voting Power

Beneficially

Owned by 0

Each 7. Sole Dispositive Power

Reporting

Person 66,224

8. Shared Dispositive Power

With:

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

66,224

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

0.2%

12. Type of Reporting Person (See Instructions)

OO

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM BioVentures IV GP LLC

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Delaware

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,814,261*

Each 7. Sole Dispositive Power

Reporting

Person 0

8. Shared Dispositive Power

With:

2,814,261*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,814,261*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

9.9%

12. Type of Reporting Person (See Instructions)

PN

* The shares are held as follows: 2,328,958 by MPM BioVentures IV-QP, L.P. (BV IV QP), 89,724 by MPM BioVentures IV GmbH & Co. Beteiligungs KG (BV KG) and 395,579 by MPM BioVentures IV Strategic Fund, L.P. (BV SF). The Reporting Person is the direct general partner of BV IV QP, BV KG and BV SF.

CUSIP No. 29428V104

1. Name of Reporting Persons

MPM BioVentures IV LLC

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

Delaware

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

Each 7. Sole Dispositive Power

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

OO

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by MPM Asset Management Investors BV4 LLC (AM BV4). The Reporting Person is the indirect general partner of BV IV QP, BV KG and BV SF and the manager of AM BV4.

CUSIP No. 29428V104

1. Name of Reporting Persons

Luke Evnin

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

Each 7. Sole Dispositive Power

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

IN

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM BioVentures IV GP LLC (MPM IV GP) and MPM BioVentures IV LLC (MPM IV LLC) are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

CUSIP No. 29428V104

1. Name of Reporting Persons

Ansbert Gadicke

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

7. Sole Dispositive Power

Each

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

IN

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM IV GP and MPM IV LLC are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

CUSIP No. 29428V104

1. Name of Reporting Persons

Vaughn M. Kailian

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

7. Sole Dispositive Power

Each

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

IN

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM IV GP and MPM IV LLC are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

CUSIP No. 29428V104

1. Name of Reporting Persons

James Paul Scopa

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

Each 7. Sole Dispositive Power

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

IN

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM IV GP and MPM IV LLC are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

CUSIP No. 29428V104

1. Name of Reporting Persons

Todd Foley

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

(a) (b)

3. SEC USE ONLY

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of

Shares 0

6. Shared Voting Power

Beneficially

Owned by 2,880,485*

Each 7. Sole Dispositive Power

Reporting

Person 0

8. Shared Dispositive Power

With:

2,880,485*

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,880,485*

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9)

10.1%

12. Type of Reporting Person (See Instructions)

IN

* The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM IV GP and MPM IV LLC are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

Item 1.

(a) Name of Issuer

EpiZyme, Inc.

(b) Address of Issuer's Principal Executive Offices

400 Technology Square

Cambridge, Massachusetts 02139

Item 2.

(a) Name of Person Filing

MPM BioVentures IV-QP, L.P.

MPM BioVentures IV GmbH & Co. Beteiligungs KG

MPM Asset Management Investors BV4 LLC

MPM BioVentures IV GP LLC

MPM BioVentures IV LLC

MPM BioVentures IV Strategic Fund, L.P.

Luke Evin

Ansbert Gadicke

Vaughn M. Kailian

James Paul Scopa

Todd Foley

(b) Address of Principal Business Office or, if none, Residence
c/o MPM Capital LLC

The John Hancock Tower

200 Clarendon Street, 54th Floor

Boston, MA 02116

(c) Citizenship

All entities were organized in Delaware except MPM BioVentures IV GmbH & Co. Beteiligungs KG, which was organized in Germany. The individuals are all United States citizens.

(d) Title of Class of Securities

Common Stock

(e) CUSIP Number

29428V104

Item 3. If this statement is filed pursuant to §§240.13d-1(b), or 240.13d-2(b) or (c), check whether the person filing is a:

Not applicable

Item 4. Ownership

(a) Amount Beneficially Owned:

MPM BioVentures IV-QP, L.P.	2,328,958
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	89,724
MPM BioVentures IV Strategic Fund, L.P.	395,579
MPM Asset Management Investors BV4 LLC	66,224
MPM BioVentures IV GP LLC	2,814,261(1)
MPM BioVentures IV LLC	2,880,485(2)
Ansbert Gadicke	2,880,485(3)
Luke B. Evin	2,880,485(3)
Vaughn M. Kailian	2,880,485(3)
James Paul Scopa	2,880,485(3)
Todd Foley	2,880,485(3)

Percent of Class:

MPM BioVentures IV-QP, L.P.	8.2%
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	0.3%
MPM BioVentures IV Strategic Fund, L.P.	1.4%
MPM Asset Management Investors BV4 LLC	0.2%
MPM BioVentures IV GP LLC	9.9%
MPM BioVentures IV LLC	10.1%
Ansbert Gadicke	10.1%
Luke B. Evin	10.1%
Vaughn M. Kailian	10.1%
James Paul Scopa	10.1%
Todd Foley	10.1%

(b) Number of shares as to which the person has:

(i) Sole power to vote or to direct the vote

MPM BioVentures IV-QP, L.P.	2,328,958
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	89,724
MPM BioVentures IV Strategic Fund, L.P.	395,579
MPM Asset Management Investors BV4 LLC	66,224
MPM BioVentures IV GP LLC	0
MPM BioVentures IV LLC	0
Ansbert Gadicke	0
Luke B. Evin	0
Vaughn M. Kailian	0

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James Paul Scopa	0
Todd Foley	0

(ii) Shared power to vote or to direct the vote

MPM BioVentures IV-QP, L.P.	0
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	0
MPM BioVentures IV Strategic Fund, L.P.	0
MPM Asset Management Investors BV4 LLC	0
MPM BioVentures IV GP LLC	2,814,261(1)
MPM BioVentures IV LLC	2,880,485(2)
Ansbert Gadicke	2,880,485(3)
Luke B. Evnin	2,880,485(3)
Vaughn M. Kailian	2,880,485(3)
James Paul Scopa	2,880,485(3)
Todd Foley	2,880,485(3)

(iii) Sole power to dispose or to direct the disposition of

MPM BioVentures IV-QP, L.P.	2,328,958
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	89,724
MPM BioVentures IV Strategic Fund, L.P.	395,579
MPM Asset Management Investors BV4 LLC	66,224
MPM BioVentures IV GP LLC	0
MPM BioVentures IV LLC	0
Ansbert Gadicke	0
Luke Evnin	0
Vaughn M. Kailian	0
James Paul Scopa	0
Todd Foley	0

(iv) Shared power to dispose or to direct the disposition of

MPM BioVentures IV-QP, L.P.	0
MPM BioVentures IV GmbH & Co. Parallel-Beteiligungs KG	0
MPM BioVentures IV Strategic Fund, L.P.	0
MPM Asset Management Investors BV4 LLC	0
MPM BioVentures IV GP LLC	2,814,261(1)
MPM BioVentures IV LLC	2,880,485(2)
Ansbert Gadicke	2,880,485(3)
Luke B. Evnin	2,880,485(3)
Vaughn M. Kailian	2,880,485(3)
James Paul Scopa	2,880,485(3)
Todd Foley	2,880,485(3)

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- (1) The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG and 395,579 by BV SF. The Reporting Person is the direct general partner of BV IV QP, BV KG and BV SF.
- (2) The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. The Reporting Person is the indirect general partner of BV IV QP, BV KG and BV SF and the manager of AM BV4.
- (3) The shares are held as follows: 2,328,958 by BV IV QP, 89,724 by BV KG, 395,579 by BV SF and 66,224 by AM BV4. MPM IV GP and MPM IV LLC are the direct and indirect general partners of BV IV QP, BV KG and BV SF and MPM IV LLC is the manager of AM BV4. The Reporting Person is a member of MPM IV LLC.

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 person has 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 or Control Person.

Not Applicable

Item 8. Identification and Classification of Members of the Group

Not Applicable

Item 9. Notice of Dissolution of a 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 10, 2014

MPM BIOVENTURES IV-QP, L.P.

By: MPM BioVentures IV GP LLC,
its General Partner

By: MPM BioVentures IV LLC,
its Managing Member

By: /s/ Luke Evnin
Name: Luke Evnin

Title: Member

MPM ASSET MANAGEMENT INVESTORS BV4
LLC

By: MPM BioVentures IV LLC
its Manager

By: /s/ Luke Evnin
Name: Luke Evnin

Title: Member

MPM BIOVENTURES IV GP LLC

By: MPM BioVentures IV LLC,
its Managing Member

By: /s/ Luke Evnin

MPM BIOVENTURES IV GMBH & CO.
BETEILIGUNGS KG

By: MPM BioVentures IV GP LLC,
in its capacity as the Managing Limited Partner

By: MPM BioVentures IV LLC,
its Managing Member

By: /s/ Luke Evnin
Name: Luke Evnin

Title: Member

MPM BIOVENTURES IV STRATEGIC FUND, L.P.

By: MPM BioVentures IV GP LLC,
its General Partner

By: MPM BioVentures IV LLC,
its Managing Member

By: /s/ Luke Evnin
Name: Luke Evnin

Title: Member

MPM BIOVENTURES IV LLC

By: /s/ Luke Evnin
Name: Luke Evnin

Title: Member

Name: Luke Evnin

Title: Member

By: /s/ Luke Evnin

By: /s/ Anbert Gadicke
Name: Ansbert Gadicke

Name: Luke Evnin

By: /s/ Vaughn M. Kailian
Name: Vaughn M. Kailian

By: /s/ James Paul Scopa
Name: James Paul Scopa

EXHIBITS

A: Joint Filing Agreement