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

SCHEDULE 13D

Under the Securities Exchange Act of 1934 (Amendment No.)*

MBX Biosciences, Inc.

(Name of Issuer)

Common stock, \$0.0001 par value per share

(Title of Class of Securities)

55287L101

(CUSIP Number)

Matthew De Dominicis Chief Financial Officer Norwest Venture Partners 1300 El Camino Real, Suite 200 Menlo Park, CA 94024 (650) 321-8000

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

September 16, 2024

(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).

| | 110. 552071 | | | | | |
|---------|--|--|--|--|--|--|
| 1. | | Names of Reporting Persons Norwest Venture Partners XVI, LP | | | | |
| 2. | | Check the Appropriate Box if a Member of a Group (See Instructions) (a) □ (b) ⊠ (1) | | | | |
| 3. | SEC Use C | Only | | | | |
| 4. | Source of I WC | Funds (| See Instructions) | | | |
| 5. | Check if D | isclosu | re 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 | | Sole Voting Power 0 | | | |
| Benefic | | | Shared Voting Power 2,136,335 shares (2) | | | |
| Each | | | Sole Dispositive Power 0 | | | |
| Person | | | 10.Shared Dispositive Power 2,136,335 shares (2) | | | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 2,136,335 shares (2) | | | | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | | | | |
| 13. | Percent of Class Represented by Amount in Row (11) 6.4% (3) | | | | | |
| 14. | Type of Reporting Person (See Instructions) PN | | | | | |

(1) This Schedule 13D is filed by Norwest Venture Partners XVI, LP ("NVP XVI"), Genesis VC Partners XVI, LLC ("Genesis XVI"), NVP Associates, LLC ("NVP Associates"), Jeffrey Crowe ("Crowe"), Jon E. Kossow ("Kossow") and Tiba Aynechi ("Aynechi" and, with NVP XVI, Genesis XVI, NVP Associates, Crowe and Kossow, collectively, the "Reporting Persons"). The Reporting Persons expressly disclaim status as a "group" for purposes of this Schedule 13D.

- (2) Shares are directly held by NVP XVI. Genesis XVI is the general partner of NVP XVI, NVP Associates is the managing member of Genesis XVI, Crowe and Kossow are Co-Chief Executive Officers of NVP Associates, and Aynechi is an officer of NVP Associates and a director of the Issuer. Each of Genesis XVI, NVP Associates, Crowe, Kossow and Aynechi, may be deemed to share voting and investment authority over these shares.
- (3) Calculation of the percentage of common stock beneficially owned is based upon 31,853,698 shares of Common Stock outstanding as of September 16, 2024 upon the closing of the Issuer's initial public offering, as reported in the Issuer's final prospectus filed with the Securities and Exchange Commission (the "SEC") on September 13, 2024 and giving effect to an additional 1,530,000 shares issued and sold pursuant to the underwriters' option.

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| coon | 110. 552671 | 0101 | | | | | |
|---------|--|---|--|--|--|--|--|
| 1. | | Names of Reporting Persons Genesis VC Partners XVI, LLC | | | | | |
| 2. | | Check the Appropriate Box if a Member of a Group (See Instructions) (a) \Box (b) \boxtimes (1) | | | | | |
| 3. | SEC Use (| Only | | | | | |
| 4. | Source of Funds (See Instructions) AF | | | | | | |
| 5. | Check if E | Disclosu | re of Legal Proceedings Is Required Pursuant to Items $2(d)$ or $2(e)$ | | | | |
| 6. | Citizenshi Delaware | p or Pla | ce of Organization | | | | |
| | Number of Shares Beneficially Owned by Each Reporting Person With | | Sole Voting Power 0 | | | | |
| Benefic | | | Shared Voting Power 2,136,335 shares (2) | | | | |
| Each | | | Sole Dispositive Power 0 | | | | |
| Person | | | Shared Dispositive Power 2,136,335 shares (2) | | | | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 2,136,335 shares (2) | | | | | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | | | | | |
| 13. | Percent of Class Represented by Amount in Row (11) 6.4% (3) | | | | | | |
| 14. | . Type of Reporting Person (See Instructions) OO | | | | | | |

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| COSII | NO. 3328/1 | | | | | |
|--------|--|---|--|--|--|--|
| 1. | | Names of Reporting Persons NVP Associates, LLC | | | | |
| 2. | Check the (a) \Box (b) | | vriate Box if a Member of a Group (See Instructions) | | | |
| 3. | SEC Use (| Only | | | | |
| 4. | Source of AF | Source of Funds (See Instructions) | | | | |
| 5. | Check if E | Disclosu | re 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 | | Sole Voting Power 0 | | | |
| Benefi | | | Shared Voting Power 2,136,335 shares (2) | | | |
| Each | | | Sole Dispositive Power 0 | | | |
| | | | Shared Dispositive Power 2,136,335 shares (2) | | | |
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| 14. | . Type of Reporting Person (See Instructions) OO | | | | | |

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| | 110. 33207 | | | | | | |
|---------|--|---|--|--|--|--|--|
| 1. | | Names of Reporting Persons Jeffrey Crowe | | | | | |
| 2. | | Check the Appropriate Box if a Member of a Group (See Instructions) (a) \Box (b) \boxtimes (1) | | | | | |
| 3. | SEC Use (| Only | | | | | |
| 4. | Source of Funds (See Instructions) AF | | | | | | |
| 5. | Check if I | Disclosu | re 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 | | Sole Voting Power 0 | | | | |
| Benefic | | | Shared Voting Power 2,136,335 shares (2) | | | | |
| Each | | | Sole Dispositive Power 0 | | | | |
| Person | | | Shared Dispositive Power 2,136,335 shares (2) | | | | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 2,136,335 shares (2) | | | | | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | | | | | |
| 13. | Percent of Class Represented by Amount in Row (11) 6.4% (3) | | | | | | |
| 14. | Type of Reporting Person (See Instructions) IN | | | | | | |

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| | 110. 552071 | | | | | | |
|---------|--|---|--|--|--|--|--|
| 1. | | Names of Reporting Persons Jon E. Kossow | | | | | |
| 2. | | Check the Appropriate Box if a Member of a Group (See Instructions) (a) \Box (b) \boxtimes (1) | | | | | |
| 3. | SEC Use (| Only | | | | | |
| 4. | Source of Funds (See Instructions) AF | | | | | | |
| 5. | Check if E | Disclosu | re 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 | | Sole Voting Power 0 | | | | |
| Benefic | | | Shared Voting Power 2,136,335 shares (2) | | | | |
| Each | | | Sole Dispositive Power 0 | | | | |
| Person | | | Shared Dispositive Power 2,136,335 shares (2) | | | | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 2,136,335 shares (2) | | | | | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | | | | | |
| 13. | Percent of Class Represented by Amount in Row (11) 6.4% (3) | | | | | | |
| 14. | Type of Reporting Person (See Instructions) IN | | | | | | |

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| | 110. 552071 | | | | | | |
|---------|--|--|--|--|--|--|--|
| 1. | | Names of Reporting Persons Tiba Aynechi | | | | | |
| 2. | | Check the Appropriate Box if a Member of a Group (See Instructions) (a) □ (b) ⊠ (1) | | | | | |
| 3. | SEC Use (| Only | | | | | |
| 4. | Source of Funds (See Instructions) AF | | | | | | |
| 5. | Check if E | Disclosu | re 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 | | Sole Voting Power 0 | | | | |
| Benefic | | | Shared Voting Power 2,136,335 shares (2) | | | | |
| Each | | | Sole Dispositive Power 0 | | | | |
| Person | | | Shared Dispositive Power 2,136,335 shares (2) | | | | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 2,136,335 shares (2) | | | | | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | | | | | |
| 13. | Percent of Class Represented by Amount in Row (11) 6.4% (3) | | | | | | |
| 14. | Type of Reporting Person (See Instructions) IN | | | | | | |

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Item 1. Security and Issuer

The class of equity security to which this statement on Schedule 13D relates is the Common Stock, \$0.0001 par value ("Common Stock") of MBX Biosciences, Inc., a Delaware corporation (the "Issuer"). The address of the principal executive offices of the Issuer is 11711 N. Meridian Street, Suite 300, Carmel, IN 46032. Information given in response to each item shall be deemed incorporated by reference in all other items, as applicable.

Item 2. Identity and Background

- (a) This Schedule 13D is filed by Norwest Venture Partners XVI, LP ("NVP XVI"), Genesis VC Partners XVI, LLC ("Genesis XVI"), NVP Associates, LLC ("NVP Associates"), Jeffrey Crowe ("Crowe"), Jon E. Kossow ("Kossow") and Tiba Aynechi ("Aynechi" and, with NVP XVI, Genesis XVI, NVP Associates, Crowe and Kossow, collectively, the "Reporting Persons"). The Reporting Persons expressly disclaim status as a "group" for purposes of this Schedule 13D.
- (b) The principal business office of the Reporting Persons is 1300 El Camino Real, Suite 200, Menlo Park, CA 94025.
- (c) The principal business of the Reporting Persons is venture capital investments. Genesis XVI is the general partner of NVP XVI, NVP Associates is the managing member of Genesis XVI, Crowe and Kossow are Co-Chief Executive Officers of NVP Associates, and Aynechi is an officer of NVP Associates.
- (d) During the last five years, none of the Reporting Persons has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).
- (e) During the last five years, none of the Reporting Persons was a party to a civil proceeding of a judicial of administrative body of competent jurisdiction or were 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) Each of NVP XVI, Genesis XVI and NVP Associates was organized in the state of Delaware and each of the individuals is a citizen of the United States.

Item 3. Source and Amount of Funds or Other Consideration

Prior to the Issuer's initial public offering (the "IPO"), NVP XVI purchased 16,666,666 shares of Series B Preferred Stock for an aggregate purchase price of \$14,999,999.40.

On September 6, 2024, the Issuer effected a 1-for-12.0221 reverse stock split of its common stock and a proportional adjustment to the existing conversion ratios of the Preferred Stock (the "Reverse Stock Split"). In connection with the closing of the IPO, on September 16, 2024, the Preferred Stock discussed above automatically converted into shares of Common Stock on a 1-for-12.0221 basis. NVP XVI also purchased 750,000 shares of Common Stock from the underwriters of the IPO price of \$16.00 per share, for an aggregate purchase price of \$12,000,000.

All purchases of the securities described herein were for cash and were funded by working capital of NVP XVI.

Item 4. Purpose of Transaction

The Reporting Persons purchased the aforementioned securities for investment purposes with the aim of increasing the value of their investments and the Issuer. Subject to applicable legal requirements, one or more of the Reporting Persons may purchase additional securities of the Issuer from time to time in open market or private transactions, depending on its evaluation of the Issuer's business, prospects and financial condition, the market for the Issuer's securities, other developments concerning the Issuer, the reaction of the Issuer to the Reporting Persons' ownership of the Issuer's securities, other opportunities available to the Reporting Persons, and general economic, money market and stock market conditions. In addition, depending upon the factors referred to above, the Reporting Persons may dispose of all or a portion of their securities of the Issuer at any time (including by means of programs adopted pursuant to Rule 10b5-1 under the Securities Exchange Act of 1934 (the "Act")). Each of the Reporting Persons reserve the right to increase or decrease its holdings on such terms and at such times as each may decide.

Except as set forth in this Item 4 and Item 6 below, none of the Reporting Persons have a present plan or proposal that relates to or would result in any of the actions specified in clauses (a) through (j) of Item 4 of Schedule 13D of the Act. However, each of the Reporting Persons reserves the right to propose or participate in future transactions which may result in one or more of such actions, including but not limited to, an extraordinary corporate transaction, such as a merger, reorganization or liquidation, sale of a material amount of assets of the Issuer or its subsidiaries, or other transactions which might have the effect of causing the Common Stock to become eligible for termination of registration under Section 12(g) of the Act. The Reporting Persons also retain the right to change their investment intent at any time, to acquire additional shares of Common Stock or other securities of the Issuer from time to time, or to sell or otherwise dispose of all or part of the Common Stock beneficially owned by them (or any shares of Common Stock into which such securities are converted) in any manner permitted by law. The Reporting Persons may engage from time to time in ordinary course transactions with financial institutions with respect to the securities described herein.

Dr. Tiba Aynechi, an officer of NVP Associates, is a member of the board of directors of the Issuer. As a director of the Issuer, Dr. Aynechi may have influence over the corporate activities of the Issuer, including activities which may relate to the transactions described in clauses (a) through (j) of Item 4 of Schedule 13D.

Item 5. Interest in Securities of the Issuer

(a) – (b). The following information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on Schedule 13D is provided as of September 23, 2024:

| Reporting Persons | Shares Held Directly | Sole Voting Power | Shared Voting Power | Sole Dispositive Power | Shared Dispositive Power | Beneficial Ownership | Percentage of Class (2) |
|----------------------|-------------------------|----------------------|---------------------------|------------------------------|--------------------------------|-------------------------|----------------------------|
| NVP XVI (1) | 2,136,335 | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |
| Genesis XVI (1) | | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |
| NVP Associates (1) | | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |
| Crowe (1) | | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |
| Kossow (1) | | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |
| Aynechi (1) | | | 2,136,335 | | 2,136,335 | 2,136,335 | 6.4% |

- (1) Shares are directly held by NVP XVI. Genesis XVI is the general partner of NVP XVI, NVP Associates is the managing member of Genesis XVI, Crowe and Kossow are Co-Chief Executive Officers of NVP Associates, and Aynechi is an officer of NVP Associates and a director of the Issuer. Each of Genesis XVI, NVP Associates, Crowe, Kossow and Aynechi, may be deemed to share voting and investment authority over these shares.
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- (c) Except as set forth herein, none of the Reporting Persons has effected any transactions in shares of the Issuer's Common Stock during the last 60 days.
- (d) No other person is known to have the right to receive or the power to direct the receipt of dividends from, or any proceeds from the sale of, the shares of Common Stock beneficially owned by any of the Reporting Persons.
- (e) Not applicable.

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

Lock-up Agreements

The holders of substantially all of the Issuer's pre-IPO capital stock, including NVP XVI, and each of the Issuer's directors, entered into lock-up agreements (the "Lock-Up Agreements") with the representatives of the underwriters of the Issuer's IPO. Pursuant to the Lock-Up Agreements, NVP XVI is not permitted, with limited exceptions, for a period of 180 days from September 12, 2024, to offer, sell, or otherwise transfer or dispose of any of the Issuer's securities, without the consent of J.P. Morgan Securities LLC and Jefferies LLC.

The description of the Lock-Up Agreements contained in this Item 6 is qualified in its entirety by reference to the full text of the form of Lock-up Agreement filed as Exhibit B to this Schedule 13D and incorporated by reference herein.

Investors' Rights Agreement

On August 2, 2024, the Issuer, NVP XVI and certain other parties entered into an amended and restated investors' rights agreement (the "Investors' Rights Agreement"). The Investors' Rights Agreement provides NVP XVI and other parties thereto with certain demand registration rights, including shelf registration rights, in respect of the shares of Common Stock issued to it upon conversion of the convertible preferred stock, subject to certain conditions. In addition, in the event that the Issuer registers additional shares of Common Stock for its own account or for the account of other holders of its securities, NVP XVI and certain other parties are entitled to include their shares in the registration, subject to certain limitations. The registration rights will expire on the earliest to occur of (a) the closing of certain liquidation events, (b) the fifth anniversary of the completion of the IPO or (c) at such time after this offering when the holder's shares may be sold without limitation pursuant to Rule 144 or another similar exemption under the Securities Act of 1933, as amended, during a three-month period without registration and such holder holds less than one percent of the outstanding capital stock of the Issuer.

The Investors' Rights Agreement contains customary cross-indemnification provisions, pursuant to which the Issuer is obligated to indemnify NVP XVI and other parties in the event of material misstatements or omissions in the registration statement attributable to the Issuer or any violation or alleged violation whether by action or inaction by the Issuer under certain securities laws and NVP XVI is obligated to indemnify the Issuer for material misstatements or omissions in the registration statement attributable to it, subject to certain limitations.

The description of the Investors' Rights Agreement contained in this Item 6 is qualified in its entirety by reference to the full text of the Investors' Rights Agreement filed as Exhibit C to this Schedule 13D and incorporated by reference herein.

Equity Awards

Dr. Tiba Aynechi, an officer of NVP Associates, is a member of the Board of Directors of the Issuer. From time to time, Dr. Aynechi may receive stock options or other awards of equity-based compensation pursuant to the Issuer's compensation arrangements for non-employee directors.

On September 12, 2024 Dr. Aynechi received an option representing the right to purchase a total of 15,963 shares of the Issuer's Common Stock, 25% of which shall vest and become exercisable on September 12, 2025, with the remaining 75% vesting in thirty-six (36) equal monthly installments thereafter, subject to Dr. Aynechi's continued service to the Issuer through each such vesting date. These options have an exercise price of \$16.00.

Item 7. Material to be Filed as Exhibits

- A. Joint Filing Agreement as required by Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended.
- B. Form of Lock-up Agreement (incorporated by reference to Exhibit D to the Form of Underwriting Agreement filed as Exhibit 1.1 to the Issuer's Registration Statement on Form S-1, as amended (Registration No. 333 281764), filed with the SEC on September 9, 2024).
- C. Second Amended and Restated Investors' Rights Agreement among the Registrant and certain of its stockholders, dated August 2, 2024 (incorporated by reference to Exhibit 4.1 to the Issuer's Registration Statement on Form S-1, as amended (Registration No. 333 281764), filed with the SEC on August 23, 2024).

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: September 23, 2024

Norwest Venture Partners XVI, LP

By: Genesis VC Partners XVI, LLC Its General Partner

By: NVP Associates, LLC

Its Managing Member

By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

Genesis VC Partners XVI, LLC

By: NVP Associates, LLC

Its Managing Member

By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

NVP Associates, LLC

By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Jeffrey Crowe

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Jon E. Kossow

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Tiba Aynechi

ATTENTION

Intentional misstatements or omissions of fact constitute Federal Criminal Violations (See 18 U.S.C. 1001).

11

Exhibit(s):

<u>A</u> Joint Filing Agreement

EXHIBIT A

JOINT FILING AGREEMENT

The undersigned hereby agree that a single Schedule 13D (or any amendment thereto) relating to the Common Stock of MBX Biosciences, Inc. shall be filed on behalf of each of the undersigned and that this Agreement shall be filed as an exhibit to such Schedule 13D.

Dated: September 23, 2024

Norwest Venture Partners XVI, LP

By: Genesis VC Partners XVI, LLC Its General Partner

- By: NVP Associates, LLC
- Its Managing Member
- By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

Genesis VC Partners XVI, LLC

By: NVP Associates, LLC Its Managing Member

By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

NVP Associates, LLC

By: /s/ Matthew De Dominicis Name: Matthew De Dominicis Title: Chief Financial Officer

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Jeffrey Crowe

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Jon E. Kossow

/s/ Matthew De Dominicis Matthew De Dominicis as Attorney-in-fact for Tiba Aynechi